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PROVINCE OF BRITISH COLUMBIA

FORTY-FOURTH REPORT

OF THE

PROVINCIAL BOARD OF HEALTH

FOR THE

YEAR ENDED DECEMBER 31ST

1940

PRINTED BY
AUTHORITY OF THE LEGISLATIVE ASSEMBLY.

VICTORIA, B.C.:
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PROVINCIAL SECRETARY,
VICTORIA, B.C., June 30th, 1941.

To His Honour E. W. HAMBER,
Lieutenant-Governor of the Province of British Columbia.

MAY IT PLEASE YOUR HONOUR:

The undersigned has the honour to present the Report of the Provincial Board of Health for the year ended December 31st, 1940.

G. M. WEIR,
Provincial Secretary.

PROVINCIAL BOARD OF HEALTH,
VICTORIA, B.C., June 30th, 1941.

The Honourable G. M. Weir,
Provincial Secretary, Victoria, B.C.

SIR,—I have the honour to submit the Forty-fourth Annual Report of the Provincial Board of Health of British Columbia for the year ended December 31st, 1940.

I have the honour to be,
Sir,
Your obedient servant,

G. F. AMYOT, M.D., D.P.H.,
Provincial Health Officer.

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THE PROVINCIAL BOARD OF HEALTH.

The Provincial Board of Health of British Columbia is The Lieutenant-Governor in Council under the provisions of the "Public Health Act." For the year 1940 the members of the Provincial Board of Health were:—

The Hon. T. D. Pattullo	*Premier and President of the Executive Council.*
The Hon. John Hart	*Minister of Finance.*
The Hon. G. M. Weir	*Provincial Secretary and Minister of Education.*
The Hon. G. S. Wismer	*Attorney-General.*
The Hon. A. Wellesley Gray	*Minister of Lands and Minister of Municipal Affairs.*
The Hon. K. C. MacDonald	*Minister of Agriculture.*
The Hon. G. S. Pearson	*Minister of Railways, Minister of Labour, and Commissioner of Fisheries.*
The Hon. C. S. Leary	*Minister of Public Works.*
The Hon. W. J. Asselstine	*Minister of Mines and Minister of Trade and Industry.*

The Hon. G. M. Weir, Provincial Secretary, acts as Minister of Health.

PUBLIC HEALTH TECHNICAL STAFF.

G. E. Amyot, M.D., D.P.H.	*Provincial Health Officer.*
J. S. Cull, B.A., M.D., D.P.H.	*Assistant Provincial Health Officer.*
Miss H. Kilpatrick, B.A., B.A.Sc., R.N.	*Director, Public Health Nursing.*
C. T. Billingsley, B.Sc., D.M.D.	*Director, Preventive Dentistry.*
R. Bowering, B.Sc. (C.E.), M.A.Sc.	*Public Health Engineer and Chief Sanitary Inspector.*
C. E. Dolman, M.B., B.S., D.P.H., Ph.D.	*Director, Division of Laboratories.*
J. T. Marshall	*Director, Division of Vital Statistics.*
W. H. Hatfield, M.D.	*Director, Division of Tuberculosis Control.*
D. H. Williams, B.Sc., M.D., M.Sc.	*Director, Division of Venereal Disease Control.*

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REPORT *of the* PROVINCIAL BOARD OF HEALTH.

INTRODUCTION.

This forty-fourth report of the Provincial Board of Health of the Province of British Columbia gives a brief summary of its various programmes and outlines the changes and advances which have taken place during the year 1940.

The Directors of the Bureau of Local Health Service, and the Divisions of Laboratories, Vital Statistics and Records, Venereal Disease Control, and Tuberculosis have contributed summaries of their programmes for the year. More detailed annual reports for the Divisions of Tuberculosis Control, Venereal Disease Control, and Vital Statistics and Records are published elsewhere.

APPOINTMENTS.

Provincial Health Officer.

Dr. Gregoire F. Amyot was appointed to the position of Provincial Health Officer and Secretary of the Provincial Board of Health on January 1st, 1940, to succeed the late Dr. H. E. Young. At the time Dr. Amyot was requested to return to British Columbia he was engaged in teaching Public Health administration in the Department of Public Health and Preventive Medicine, of the Medical School, in the University of Minnesota, Minneapolis, with the rank of Professorial Lecturer.

Dr. Amyot received his early academic training in the City of Toronto and took his medical training in the faculty of medicine of the same university, graduating in the year 1925 with the degree of M.B. During his medical course he served eighteen months as a student interne in the Ontario Mental Hospital, Toronto. Following graduation, Dr. Amyot interned at the Ottawa Civic Hospital and, in addition to the one-year general internship, received four months' intensive study in the X-ray Department of the same hospital.

In the fall of 1926 Dr. Amyot was appointed to the Provincial Department of Public Health of Saskatchewan, where he served in the capacity of Travelling Epidemiologist, undertaking certain immunizing procedure in the outlying areas of the Province.

In the spring of 1927 Dr. Amyot was appointed as Superintendent of the Ile de la Crosse Hospital, operated by the Provincial Health Department in Saskatchewan. This hospital is located some 180 miles north-west of the railroad, and its twenty-five beds serve a population of whites, half-breeds, and Indians in the Far North. Dr. Amyot also held the positions of Medical Health Officer and Coroner for his area. He performed all the medical practice in this large area of the North Country. During the summer months Dr. Amyot assisted in providing medical care for the Indians in treaty area No. 10, which area covers a large part of the North Country. The annual trip took seventy-two days by canoe.

In 1929 he was granted a fellowship to attend the School of Hygiene, University of Toronto, for the course leading to the diploma in Public Health. On the completion of this course he received both the D.P.H. and M.D. degrees from the University and, in addition, a travelling fellowship from the Rockefeller Foundation. Following this, three months were spent with the State Health Department studying the practical application of Public Health principles in the State of Michigan.

On the completion of these courses, Dr. Amyot was appointed Health Officer for the City and District of North Vancouver and first Director of the North Vancouver Health Unit. He served in that capacity until 1936, when he was appointed Assistant Provincial Health Officer and Director of Hospital Services. In this latter position Dr. Amyot undertook the difficult task of preparing a detailed practical programme of administration for what is now known as the Greater Vancouver Metropolitan Health Department.

At the same time, Dr. Amyot directed a study of some twenty-two of the larger hospitals of the Province of British Columbia, involving in all 28,000 patients. It was this survey of the hospital situation in the Province of British Columbia that has aided so materially in the reorganization and the progress of the entire hospital programme under the supervision of the Provincial Government. Dr. Amyot also conducted an extensive survey into the provision of medical care for relief recipients and others depending in part or whole on Government assistance.

On January 1st, 1938, Dr. Amyot accepted the position of Administrative Associate of the American Public Health Association, with headquarters in New York City, to be associated with Dr. Carl E. Buck, Director of Field Services of that Association, in the conduct of a new type of intensive and comprehensive study of the entire health services of several States. Among those studied were the States of Oklahoma, Michigan, Florida, and certain cities and other specialized surveys. Far-reaching results in the improvement of public health in the State of Florida have followed as the direct result of the study and report made in that State. At times, the progress of public health in the State of Florida reaches proportions that could be called spectacular.

The Department of Preventive Medicine and Public Health of the University of Minnesota requested Dr. Amyot, at the termination of his duties with the American Public Health Association, to accept a position as Professorial Lecturer, wherein he could utilize the experience he had gained through his past positions in public health, and particularly the invaluable experience gained while studying State Health programmes.

As a youth, Dr. Amyot joined the Canadian Army Medical Corps early in 1915 and proceeded overseas within six weeks after enlistment. He served with this Corps in England and reached Salonika just before the Serbian retreat. After two years there the unit returned to England and Dr. Amyot transferred to the Royal Air Force. He served with this group until the end of the war, spending in all over four years in the Services.

To his new position of Provincial Health Officer of British Columbia Dr. Amyot comes well qualified with a wealth of experience in all fields of public-health work.

The following are appointments of senior officers in the Provincial Board of Health, made during the year 1940 in conformity with changes and progress of the programme.

Public Health Engineer and Chief Sanitary Inspector.

On April 30th, 1940, Mr. Frank S. DeGrey retired as Chief Sanitary Inspector for the Provincial Board of Health, after thirty-four years' continuous service with the Department.

Mr. DeGrey was appointed Assistant Sanitary Inspector for the Provincial Board of Health on April 1st, 1912, and on November 1st, 1914, when Dr. Walter Bapty enlisted for overseas service, Mr. DeGrey was appointed Acting Secretary of the Provincial Board of Health and Registrar of Births, Deaths, and Marriages, which position he held until June 1st, 1916, when Dr. H. E. Young was appointed Provincial Health Officer. On April 1st, 1917, Mr. DeGrey was appointed Chief Sanitary Inspector, the position he held at his retirement. Mr. DeGrey was endowed with diplomacy and tact so necessary in dealing with the control of sanitary conditions in the numerous camps and canneries.

As successor to Mr. DeGrey comes a young man from Manitoba, Mr. Reginald Bowering, a graduate of the University of Manitoba, with the degree of B.A.Sc. in Civil Engineering, being Gold Medallist for the year 1938. Later Mr. Bowering went to the University of Toronto, where in 1939 he took his M.A.Sc. in Sanitary Engineering. Mr. Bowering spent two summers in mining activity in Northern Ontario and one summer in highway-construction. Following graduation he was connected for a month with a typhoid fever investigation in St. Boniface, Manitoba. Mr. Bowering was appointed Public Health Engineer and Chief Sanitary Inspector for British Columbia as from May 1st, 1940.

Director of Public Health Nursing.

On September 7th, 1940, Miss Heather Kilpatrick was appointed Director of Public Health Nursing on the staff of the Provincial Board of Health. Miss Kilpatrick is a native daughter of British Columbia and received her primary education in both Revelstoke and Vancouver. She is a graduate of the University of British Columbia, from which she holds the degrees of B.A. and B.A.Sc.

After her public-health training she was attached in 1931 to the staff of the Cowichan Health Centre, Duncan, becoming Supervisor there in 1936. In 1937 she was granted three and one-half months' leave of absence to attend the International Congress of Nurses in London, England. While overseas Miss Kilpatrick observed the work of the Queen's Nurses at Kensington Borough Health Centre and on the return journey visited the Panamanian Government Hospital and School for Nurses in Panama City.

In 1939 Miss Kilpatrick was granted a fellowship by the Rockefeller Foundation to attend the University of Toronto for a one-year postgraduate course in Public Health Supervision. She completed her fellowship with field-work in counties in New York State and Tennessee and a short period in New York City.

Director of Preventive Dentistry.

For some years the Provincial Board of Health has been looking forward to the time when a start would be made toward the creation of a Division of Preventive Dentistry. Such a beginning has now become fact with the appointment, during the month of September, 1940, of Dr. Clifford T. Billingsley as a member of the staff. Dr. Billingsley received his public and high school education in the City of Victoria. His professional training was received at the North Pacific Dental College, Portland, Oregon, from which he graduated with the degrees of B.Sc. and D.M.D. Dr. Billingsley will be in charge of the complete dental programme and will not only establish a dental health education policy, but will endeavour to secure greater uniformity as between the dental clinics in operation at the present time.

THE HEALTH OF THE PEOPLE OF BRITISH COLUMBIA.

A brief summary of the health of the people of British Columbia is presented this year as an integral part of the Annual Report. It is felt that this summary, based on the statistical data available, should be of considerable interest.

The details of the progress made during this year in a programme designed for the protection of the health of the people will be found in the reports by the various divisions.

The health of the people of British Columbia is reflected to some extent in the mortality figures for 1940, but these figures should be studied carefully. Thus, although the death-rate increased from 9.7 per 1,000 population in 1939 to 10.5 in 1940, yet the increase was due largely to the number of people dying in the older age-groups. Six hundred and forty-four more persons died at ages 60 years and over than in the previous year. If this increase had not taken place the death-rate would have been just the same as the year previous. It should be pointed out that slightly more than half of all deaths in the Province were of persons 60 years of age and over. About one-fifth of the deaths in British Columbia occurred in the age-groups 40 to 59; approximately one-twelfth between 20 and 39; and one-ninth under 20 years of age.

Five hundred and twenty-six deaths occurred in infants before reaching 1 year of age. This figure represented slightly more than half of the deaths under 20 years of age. The infant mortality rate has continued to drop from thirty-nine in the year previous to thirty-eight for this year. Further improvement is expected in the future with intensification of the public-health programme. There were forty-three maternal deaths in the year, an increase of five over last year. However, the maternal mortality rate remained the same at 3.1 per 1,000 live births, although this by no means represents the minimum rate to be attained in the future.

This question then arises, in view of the above figures; what are the chief conditions responsible for death? A study of the leading causes of death shows that diseases of the heart accounted for more deaths than all other conditions, numbering in all 1,725. Cancer was again the second leading cause of death; 1,173 persons died of this disease. Violent or accidental deaths ranked third. Diseases of the arteries were fourth. Tuberculosis ranked fifth with 578 deaths; the tuberculosis mortality rate increased from 71.3 in the previous year to 72.7 per 100,000 population. If, however, Indian deaths are excluded, the tuberculosis mortality rate then becomes 48.8. Pneumonia ranked sixth as a cause of death, followed by nephritis. Diseases of early infancy ranked eighth. Influenza deaths almost doubled in 1940 in comparison with the year previous. There were ninety-seven deaths from this cause in 1939 and 179 in 1940. Influenza ranked as the ninth leading cause of death.

In order to gain a full appreciation of the mortality picture of the Province it is necessary to consider Indian deaths as they affect certain specified diseases. Generally speaking, the Indian mortality exerts little influence on the figures of the leading causes of death in the age-groups 30 years and over. It is under 30 years that the most significant differences

occur. In fact, 60 per cent. of the Indian deaths were persons dying under 30 years of age; one-quarter of all the Indian deaths were under 1 year of age and one-third were under 5 years of age. Approximately one-fifth of the deaths of infant Indians were due to pneumonia and bronchitis.

One-third of all the Indian deaths were due to tuberculosis. Three out of every four of such deaths were Indians under 30 years of age. For certain diseases, especially tuberculosis, pneumonia, and bronchitis, Indian mortality exerts a very unfavourable influence upon the vital statistics of the Province. As the Indians are the wards of the Federal Government they do not constitute a direct public-health responsibility of the Provincial Board of Health. Indirectly, however, their existence as a potential menace to the health of the people can not be ignored in the public-health programme.

Analysis of mortality figures must always be studied with an eye to both the cause thereof and the means of prevention which must be employed to lessen the number of preventable deaths. The Provincial Board of Health uses such analyses to direct its programme. Often it is necessary to exclude Indian deaths if a true picture of the responsibilities of the Board of Health are to be evaluated. Therefore the following statistics by age-groups are exclusive of Indians. A study of the chief causes of death of infants under 1 year of age reveals that prematurity was responsible for more deaths than any other cause. In fact, 38 per cent. of infant deaths were due to this cause alone. Undoubtedly, adequate prenatal care as well as improved postnatal care can reduce the number of such deaths considerably. The second cause of death of infants under 1 year was congenital malformations—the causes of which are not now controllable by preventive measures. Pneumonia and bronchitis accounted for approximately one-tenth of the deaths of infants under 1 year of age.

If deaths of pre-school children are examined it is found that the leading cause of death was violence or accidents, which accounted for eighteen out of the ninety-one deaths between the ages of 1 and 4 years. Ten of these deaths were due to accidental drowning and four were due to accidental fall or crushing. Not all of these deaths, but certainly some, could have been prevented. Fifteen deaths were due to pneumonia and bronchitis. With new advancements in pneumonia therapy this figure should be reduced in the future. Tuberculosis accounted for seven deaths in this pre-school group.

A study of each age-group shows that the greatest number of deaths under 40 years of age were from violent or accidental causes. Investigation of accidental deaths will reveal that many should never have occurred if proper precautions had been taken to prevent them. The Provincial Board of Health recognizes these deaths as a problem which it must endeavour to meet, largely by educational measures.

Tuberculosis ranked as the second leading cause of death of young people dying between the ages of 10 and 39 years. Tuberculosis is preventable. The Division of Tuberculosis Control of the Provincial Board of Health has an outstanding programme, but much remains to be done before it is possible to report that tuberculosis is no longer a leading cause of death. It is worthy of note, however, that the trend has been downwards for the past several years in the number of deaths reported from tuberculosis in the younger and economically valuable age-groups.

It is generally considered that the most productive period of life is between the ages of 40 and 59 years. It is a tragedy that cancer should be the chief cause of death among this group of people. Undoubtedly the number of cancer deaths could have been greatly reduced if the patients had sought earlier diagnosis and treatment. Steps will be taken by the Provincial Board of Health next year to set up a reporting system of the incidence of new cancer cases. In this "middle age" group diseases of the heart were the second cause of death, violent or accidental deaths were third, and tuberculosis was fourth. The same truth applies to these diseases as to cancer; that is, they are diseases which can be prevented to some extent or, at least, the effects of the diseases postponed till later life. Greater emphasis is forecast in the public-health programme upon means of lengthening the life of the people of the Province.

After 60 years of age the leading cause of death is diseases of the heart. Cancer ranks second, except between the ages of 80 and 89, when it ranks third and diseases of the arteries rank second.

A comparison between the communicable diseases (including Indian deaths), other than those previously mentioned herein, shows that the year 1940 was fairly favourable compared with the previous five years. Especially was this true in the case of measles, erysipelas, and whooping-cough. Exceptions were encephalitis (five deaths having occurred during 1940) and septic sore throat (fifteen deaths having occurred during the year). The very fact that these and other deaths from communicable diseases occurred in 1940 is sufficient proof that there can never be a relaxation of the control methods designed to eliminate the communicable diseases. The public-health worker and the private physician have to be always on the alert to discover the presence of these diseases and to institute control.

The field of public health is constantly expanding, so that to-day it includes not only those measures designed to prevent illness and premature death but also those designed to prevent premature crippling and invalidism. Degenerative diseases of "middle age," such as heart-disease and cancer, play too large a part in community economic loss through the necessary retirement of people at the period of their maximum usefulness. In the future both therapeutic and preventive medicine will have to pay more attention to the new field of geriatrics (study of degenerative diseases).

OVERSEAS CHILDREN.

The Provincial Board of Health prepared a detailed programme including provision for physical examination and the protection of the health of a large group of overseas children. This plan was prepared in such a manner that mimeographed instructions were available for every person taking part in the programme. This included doctors, nurses, and volunteers. The plan was only utilized to a very small extent, due to the limited number of children who came to Canada under this plan.

The Tuberculosis Vancouver Unit was set up as a medical clearing centre through which all children passed after they had had two days' rest after arrival in Vancouver. From this centre children were sent to various parts of the Province and their medical records sent to the local health authority.

The directors of local Health Units and the Public Health Nurses throughout the Province volunteered their services to aid in any capacity they might be required. This, of course, also included all the technical and even the non-technical members of the staff of the Provincial Board of Health.

ROCKY MOUNTAIN SPOTTED FEVER, TULARÆMIA, AND PLAGUE SURVEYS IN BRITISH COLUMBIA, 1940.

The spring of 1940 saw the beginning of the third summer's work of the Sylvatic Plague and Rocky Mountain Spotted Fever survey in British Columbia. This is a co-operative effort of the Provincial Board of Health and the Dominion Department of Pensions and National Health, assisted by a grant from the International Health Division of the Rockefeller Foundation. A similar survey is also carried on in the Province of Alberta. Valuable help was provided by the Entomological Branch of the Dominion Department of Agriculture at Kamloops.

In 1940 the Provincial Department of Health placed a second field crew on the surveys. This enabled one crew to work entirely on tick collections and the second to spend whole time on plague investigations.

All specimens were examined at the Laboratory of Hygiene, Kamloops, B.C., where a permanent staff of six is maintained. The Live-stock Insect Laboratory, Department of Agriculture, Kamloops, B.C., supplied part-time assistance of an entomologist.

Specimens examined.	1939.	1940.
Ticks	10,655	20,767
Wild rodents	1,830	2,138
Wild-rodent fleas	3,397	7,211
Rats	1,166	838
Rat fleas	2,160	1,234

A highly virulent strain of Rocky Mountain spotted fever demonstrated in ticks from Kelowna area, 9 miles south of this city on the McCullough Road. Strains of low virulence were demonstrated at Rayleigh, B.C., and in the Nicola district, 12 miles south of Kamloops.

Tularæmia was demonstrated in ticks from Bull River Canyon, Wardner, Hosmer, Fruitvale, and Vavenby districts.

No sylvatic plague has been found. The situation here may be summarized as follows: Sylvatic plague is present in Washington, Idaho, and Montana, and has been shown to have extended into Alberta, 180 miles north of the International Boundary. It is likely that it will also extend into British Columbia, if it has not already done so. Plague infections may remain quiescent in an infected area and flare up only at intervals. This, coupled with the large area to be checked, makes repeated sampling of the rodent population necessary if old or newly introduced foci of infection are to be detected.

Although no gross evidence of plague was found on dissection of the rodents, nevertheless these findings do not warrant a relaxation of vigilance, since failure to encounter infection during any one season or seasons does not preclude the presence of the plague bacillus.

Rat surveys in Vancouver have shown a heavy infestation at the garbage-dump on the C.N.R. flats. This appears to serve as a feeding-ground for rats which migrate in nightly from the surrounding district. Here the *cheopis* index (flea index) has been as high as 3.42, a condition suitable for epidemic spread of plague should the infection be introduced. Other areas in the city, including water-front areas, show a much lower flea index, being consistently below Wu's critical index of one *X cheopis* flea per rat. In the absence of any known established colony of black and alexandrine rats the occasional taking of single specimens along the wharf areas would seem to indicate occasional rats reaching this area from ships.

BUREAU OF LOCAL HEALTH SERVICES.

The Bureau of Local Health Services is responsible for supervision of Public Health Nursing, full-time Health Units, Preventive Dentistry, Local Health Officers, School Medical Services, Visual Education, and Public Health Engineering. In so far as these various phases of the work are concerned, the year 1940 was not only a very busy one but also a very interesting one. A considerable amount of time and effort was spent in analysis and critical appraisal of the value and practicability of policies and procedures which have been in effect for many years. Such activities were prompted by a sincere effort to provide for the people of British Columbia the greatest amount of good to the largest number of people possible with the amount of money available for these various types of services provided. The year was marked by several very definite advances which will be pointed out in the course of the report.

Public Health Nursing.

In this particular field, a very definite effort has been made not only to broaden the viewpoint of the workers but also to re-establish the whole programme on a more generalized basis. When the first Public Health Nurses were appointed the best approach to the bulk of community health problems was considered to be through the school child. Thus it was that in many centres work was restricted to school-nursing. Now, however, we realize that it is quite impossible to separate the health problems of any one age-group, as for example those of the school children, from those of the community as a whole. Whatever affects the community affects the school group and vice versa. Thus it is that the modern concept of public health envisions service to every individual within a community. In practice, therefore, the Public Health Nurse begins her work with the expectant mother during the prenatal period. Throughout this period, as well as those of infancy, the pre-school, and school years, and all through life, maintenance of health is the main objective of a Public Health Nurse. The question is, how is the objective to be obtained. In brief, the answer is through instruction and advice: first, to the parents who are responsible for the care of the children; and second, to adults, young and old, upon whom rests the responsibility for the care of their own health.

Some districts throughout the Province have shown their awareness of community health problems through the establishment of a Public Health Nursing Service. Unfortunately, however, too few districts are so enlightened. Continued education here again offers the only hope for more progress in this direction. The desire for health and for the services which strive for the promotion of health must be fostered. Some of the services to be obtained through the work of a local Public Health Nurse might be mentioned here. The mothers-to-be are taught the value of early medical care, how to safeguard their own health and how to prepare and care for the tiny infant. The young mothers are instructed on the physical care, feeding, and training of the infant. Prevention of disease and immunization against certain

definitely preventable infections are emphasized during infancy as well as during later periods. From 1 to 6 years the child passes through the pre-school period, and during this time the parents are given further guidance and instruction. During the period of school life, health supervision of the child is continued by the Public Health Nurse. In addition, her work also covers community health education, mental hygiene, sanitation, and control of communicable disease, including both tuberculosis and the venereal diseases.

A definite forward step in administration took place when, in August, 1940, we were able to add to the staff a Director of Public Health Nursing. While the various Public Health Nurses throughout the Province are employed directly by either the local School Boards or local health committees, nevertheless, supervision concerning the technical phases of their programme is provided by the Provincial Board of Health. In the past it has been difficult to carry out such supervision because of the infrequent visits of the central office staff to the various centres throughout the Province. Now, however, with a Director of Public Health Nursing this work can be carried on more effectively. As a matter of fact, Miss H. Kilpatrick, our Director, has already made a rather extensive trip throughout the interior of the Province in order to not only meet the various Public Health Nurses, but also to study the nursing phases of health problems as they exist in these various centres.

The report for 1939 pointed out that, during that year, it had not been possible to complete plans for Public Health Nursing Services in Quesnel and Cranbrook. Arrangements were finally made early in 1940 and both these centres of the Province now have a well-established Public Health Nursing Service. Progress in the establishment of new centres has been slow, but nevertheless regular, and during recent years there have been on the average approximately two new centres opened annually.

In December, there was commenced a revision of the various individual record forms in the Public Health Record System which is used throughout the Province by the Public Health Nurses. Our Director of Public Health Nursing will be of very considerable help in this important work, through being able to present the viewpoint of the nurses in the field who have actually been making use of the record forms currently in use. In the same month—namely, December—another definite advance was made with the publication of the first issue of a News Letter from the Provincial Board of Health to the Public Health Nurses throughout the Province. This News Letter will go forward monthly, and it is hoped that it will form a medium, both for a review by the Public Health Nurses of their experiences with various types of programmes, as well as a means of publicizing pertinent facts concerning the services provided by and available through the Provincial Board of Health.

School Medical Services.

Considerable thought has been given to this phase of the work, with regard to possible means of improvement. The present school medical cards, as well as the report required from the various local School Medical Inspectors, have not proved to be entirely satisfactory and a revision of the former is already under way. Revision of the latter will be commenced early in 1941.

Some of the difficulties in this particular field are felt to be due to some lack of understanding on the part of School Medical Inspectors as to the relationship between their particular duties, the school curriculum, and the health of the school child and the community. An endeavour was made to overcome any possible misunderstanding on this point prior to the commencement of the fall school term. A rather complete explanatory letter was sent to all School Medical Inspectors throughout the Province outlining the public-health interpretation of school medical examinations in general, as well as the duties and responsibilities of the medical examiners. Evidence is already at hand of an improvement in school medical services, and it is felt that we are on the road toward closer co-operation and a better understanding with the School Medical Inspectors throughout the Province.

Epidemiology and Notifiable Diseases.

A table on pages 47 to 51 shows the number of reported cases of notifiable diseases. The total number reported—namely, 19,238—represents an increase from the relatively few which were reported in the previous year. In 1939 only 11,429 cases were reported. With the concentration of an increasing number of troops in barracks, it might have been expected

that there would have been a much larger rise in communicable disease during the year just passed. A rise in the incidence of cerebrospinal meningitis was to be expected, and while an increase did take place from five cases in 1939 to twenty-four cases in 1940, nevertheless twenty of these cases occurred in the civilian population. There was also an increase in influenza from 1,460 cases last year to 4,277 during 1940; and again, the great bulk of this infection was amongst the civilian population. Chicken-pox showed a slight decrease from last year, while the incidence of whooping-cough was reduced by approximately 50 per cent. It is gratifying to be able to report that not a single case of smallpox occurred during the year. This is probably the first year in the history of British Columbia that this disease has not made its appearance in our Province. It is hoped that this may continue to be the report on this infection for many years to come.

Again there is a slight increase in the number of cancer cases reported. However, the fact that this number of cases is approximately the same as the number of deaths from this disease makes it obvious that we have no accurate knowledge of the true incidence of cancer in our population. A joint effort is being made this year through the co-operation of the Cancer Committee of the B.C. Medical Association and the Provincial Board of Health in an endeavour to improve the reporting of this particular disease, so that we may be more accurately informed as to the extent of this important health problem.

It was anticipated that the year 1940 would show a still further reduction in the number of reports concerning diphtheria. However, as a matter of fact, one more case than last year was reported during 1940, making a total of ten cases. It is hoped that with the continuation of immunization programmes throughout the Province it may be possible to report the passage of a year when diphtheria has not occurred in British Columbia.

The last two months of 1940 were characterized by a considerable increase in the number of cases of rubella (German measles). This infection was present both in the troops and the civilian population. As considerable intermingling takes place between the armed forces and the civilian population, it is conceivable that 1941 may be characterized by a rather widespread epidemic of this disease.

Typhoid and paratyphoid fevers combined showed a rise from thirty-seven cases in 1939 to fifty-six in 1940. In this connection it must be pointed out that this situation illustrates the urgent need for an epidemiologist on the staff of the Provincial Board of Health. While it has been fortunate that none of the outbreaks has involved a large number of people, nevertheless these diseases do occur from time to time at various centres throughout the Province and involve from two up to perhaps six or eight people. The outbreaks which have occurred during the past years have no doubt resulted in a considerable number of "carriers" of these diseases who may, or may not, know the potential hazard that they constitute to their fellow-men. In many cases it is difficult for the local part-time health officer to track down the source of the infection. Unfortunately, a part-time health officer must rely on the practice of medicine for his living and therefore cannot devote the time, nor has he the necessary training, to carry out scientific epidemiology.

Full-time Health Services.

Previous annual reports have drawn attention to the slow but gradual development of full-time Health Units in the Province. The Okanagan Valley has been particularly mentioned in this connection from time to time, and during 1940 one of the final steps was taken toward the formation of the Okanagan Valley Health Unit. During 1940 a satisfactory agreement was entered into with the City of Kelowna, whereby this city became an integral part of the Okanagan Valley Health Unit. A number of discussions were held with various municipal officials throughout the whole valley, and it is fully expected that during 1941 the territory served by this full-time health service will be considerably extended. The far-sighted plan toward which the late Dr. H. E. Young worked so assiduously would appear to be gradually becoming a reality. The ultimate plan is that all the territory from Kelowna south to the border will be incorporated under one single local health service, with a uniform programme being carried out in all the individual communities. The cost of such a progressive plan of local health administration is exceptionally low to the individual areas. In fact, the benefits of such full-time service can be purchased by a local community in no other way. Also, no better plan is known for bringing to the people of any area of the Province the various specialized and technical services made available by the Provincial Board of Health.

If each community were to endeavour to purchase, under their old set-up, the equivalent to the service they now receive, the cost would not only be exorbitant but simply out of the question for the individual communities of this section of the Okanagan Valley.

There is no doubt that the improved health services which accompany the establishment of Health Units in various centres throughout the Province have been the means of saving considerable sums of money to the taxpayers, both in the form of decreasing the number of repeaters in school and also through the raising of the general level of school health. In addition, the improvement of the general health of a community, the prevention of epidemics, and the improvement of sanitation represent a saving of no mean proportion to any group of taxpayers. Among other things, this is shown by a reduction of hospital costs, reduction in time loss in industry from preventable causes, a reduction in accidents and a more healthy mental outlook by both employer and employee.

The Metropolitan Health Board for the Greater Vancouver area has been mentioned in previous reports and has continued to make steady progress in effective health-work. Each year only serves to further emphasize the value of this type of public-health administration for adjacent urban and suburban communities. A summary report for the year 1940 is appended. A glance at this will give an indication of the extent and variety of the work carried on, but for more complete details of the entire programme reference to the annual report of the Greater Vancouver Metropolitan Health Board is heartily recommended.

Both the public and communities are becoming more health-conscious each year. More and more the people are realizing the futility of spending large sums of money for the correction of various physical defects which have occurred, and are occurring, as a result of various diseases to which human beings fall heir. Gradually it is being realized that not only the expense but human suffering can be saved by considerably smaller sums of money being spent for the establishment of effective and efficient local health services. This can only be provided through trained personnel, whose entire time and effort are devoted to the prevention of disease and premature death and the promotion of human health and happiness. This increasing consciousness on the part of the public is also manifested by a greater desire for information concerning health insurance plans, hospital costs, preventive dentistry, and, in fact, all health and welfare activity, much of which is tax supported.

Many discussions have been held with School Boards and municipal councils throughout the Province with a view to stimulating a desire toward the formation of full-time Health Units for centres which form a geographical unit. Unfortunately, however, at the present time there are no more trained physicians with a public-health degree to take charge of the work in such areas when such positions become available. There are no more physicians in training from our Province at the present time, and with the demand for physicians from the armed forces it would appear that the shortage of trained personnel will probably exist until international peace has been restored. Very much the same situation is approaching in so far as the supply of Public Health Nurses is concerned, although, up to date, we have been able to meet the demand.

Public Health Education.

Apart from the function of stimulating the desire for adequate local health service, the other main function of a Provincial Health Department should be the provision of such technical and specialized services as are not capable of organization locally. One of such technical services is the assisting of local health departments in the matter of health education of the public.

In this direction definite progress has been made during the past year. Our reference library has been revised and a number of up-to-date text-books and monographs purchased. Also, a start has been made toward the building-up of a library of small-sized lantern-slides on health subjects. The field of visual education is assuming more importance all the time, and particularly through the medium of motion pictures. In line with this trend, the Provincial Board of Health saw fit to purchase a sound motion-picture projector, together with a limited number of selected films on various health subjects. It has been found that a very large number of films are available but, unfortunately, in the majority of cases the subject has been presented either in the light of certain geographical or sociological conditions more applicable to the United States than to Canada, or else from the point of view of an educational film to be used for class-room teaching. This reduces, very considerably, the number

of acceptable films, and it would appear that the most logical solution is to produce our own films, depicting conditions as they exist in British Columbia, and the services available through local and Provincial health departments. By careful planning it has already been found that the production of such films can be done for a quite reasonable cost. The first film completed was produced through the Division of Venereal Disease Control and has received outstanding comment from public-health authorities, both in the United States and Canada. It is hoped that similar types of films may be produced in the next few years covering other phases of public-health work.

The requests for health literature and the distribution of same by the Provincial Board of Health continue to show a steady increase. A rather complete revision of our available literature took place during the year, in order to bring it up to date and in accordance with the latest findings of scientific research and proven practical methods of public-health administration. The kind co-operation of the Canadian Welfare Council, which has so often been mentioned in previous reports, has been continued, with the result that we have been able to distribute in letter form much-needed, and much-appreciated, advice to expectant mothers throughout the Province. During 1940, 14,238 prenatal letters were sent to 1,582 expectant mothers who requested this service. In letter form also is a series of letters dealing with the first twelve months of the baby's life, another series dealing with the pre-school period, and a third series dealing with the years of school life. To the 4,267 mothers who requested the postnatal series, 51,204 individual letters were sent. Requests were received from only 1,106 mothers and 376 mothers for the pre-school series and school series respectively. These series are not used as extensively as they might be, and it is hoped that the Public Health Nurses may be able to increase the demand for this valuable health education material.

Preventive Dentistry.

Since 1935, financial assistance by way of grants paid on various bases has been given to local communities throughout the Province to assist them in tackling the problem of dental caries, and also to aid in the education of the people as to the need for periodic dental care. Previous reports have commented on the widespread need for preventive dentistry for the school child, and also endeavoured to point out some of the benefits resulting from the dental work that was being done. Local dentists were usually employed, if available, but for many of the more remote areas it has been necessary to employ non-resident dentists for short periods of time in order to provide the service. However, it was felt that our whole dental programme needed revision in order to place it on a more practical, scientific, and uniform basis, and early in 1940 this matter was given considerable attention.

The practicability of various local arrangements for dental clinics in various parts of British Columbia was carefully studied, as were the recommendations of the Canadian Dental Hygiene Council. We were finally able to evolve an outline which has formed a basis for the operation of local dental clinics since that time. It involves a number of somewhat radical changes from what has been carried out in the past, but yet nothing that has not been proven to be essential. For example, it has been the experience too often in the past to find that a community would exert every effort to organize and operate a dental clinic for a period of a few weeks until such time as a considerable number of school children had received the benefit of dental care. The thought was then prevalent that nothing further in the way of community organization or dental health needed to be done until such time as a considerable number of children again began to complain of dental trouble. We know from experience that a dental clinic must be so organized as to operate, if at all possible, on an annual basis if the best results for the largest number of people are to be obtained with the amount of money available. In addition, we also know that it is absolutely essential for pre-school children to be included in the dental programme. It is still very difficult to convince parents that the deciduous or foundation teeth of children between the ages of 2½ and 6 years should be given attention in order to protect the child's health. It is only as the number of pre-school children treated in dental clinics increases that the clinics will actually make any progress in improving the dental condition, over a period of time, of the children of any community. Thus, one of the most urgent recommendations is that at least one-fifth or more of the number of school children treated at the clinic must be children of pre-school age.

A special type of report form has been drawn up, which is submitted by the dentist following the completion of the work at the dental clinic. It outlines in detail the type and amount of work done on each child. This report was drawn up rather late in the year, and it will be at least another twelve months before we will be able to analyse the information which will be available at that time. It is felt quite definitely that we will have information of a much more practical nature than has been the case in the past.

One of the most interesting developments in this particular field during the year was the fact that we were able to appoint a specially trained and qualified dentist as Director of Preventive Dentistry. To him has been given the responsibility of not only supervising local dental clinics and stimulating the organization of others, but also the carrying-on of actual preventive dental care in a number of rural areas of the Province where resident dentists are not available for this service. The appointment of such a professional person to the staff of the Provincial Board of Health constitutes a forward step which should, and we feel will, have far-reaching effects in relationship to the dental health of the children of this Province. Usually, one of the first responses following a dental clinic is a comment by the school teachers on the decreased amount of absence due to toothache. No doubt thousands of dollars already have been saved in the past, and will continue to be saved in the future, by reducing the amount of time lost in school because of dental caries, and possible subsequent repeating of grades by these children.

A tremendous amount of correspondence has been carried on with the Public Health Nurses, local School Boards, and local health committees concerning the organization and administration of local dental clinics. More and more it is being accepted that the treatment of the pre-school children together with the lower grades of school children, and the treatment of this same group through a clinic which is organized to operate on an annual basis, constitutes the most practical and the most logical approach to the whole problem of dental caries in our Province.

Public Health Engineering.

Mr. Frank DeGrey retired on April 30th from the position of Chief Sanitary Inspector, a position which he had filled most worthily for some thirty years. To fill the vacancy we were successful in obtaining one of the first graduate engineers to secure postgraduate training in public health from the School of Hygiene, University of Toronto. Mr. Bowering, our new Public Health Engineer, brings not only a genuine interest in the problems at hand but also a wealth of knowledge gained from practical experience. The full report of the Public Health Engineering Division is appended herewith, and even a glance at it will show not only the variety and complexity of the work involved but also the definite advances that have been made during 1940 and plans that have been outlined for further progress during 1941.

APPENDICES.

APPENDIX No. 1.

SUMMARY REPORT OF THE DIVISION OF VITAL STATISTICS, 1940.

J. D. B. Scott, B.A., B.Com., Acting Director.

The Effects of the War upon the Division of Vital Statistics.

The beginning of the year found the Division of Vital Statistics hard at work meeting the problems of the war emergency. The flood of applications for marriage licences, which commenced with the declaration of war in 1939, continued to make 1940 the peak year. Similarly, the number of marriages performed by civil ceremony was the highest in the history of the Province. Directly related to these increases was the record number of marriages registered by the Division. In fact, more births, deaths, and marriages were registered in 1940 in British Columbia than ever before. Also more birth and marriage certificates were issued in this first full year of the war than in any other previous year to date.

This greatly increased volume of work by no means represented all the war-time activity of the Division of Vital Statistics, not the least of which was the direct services rendered to the Dominion Government. Starting in the month of June, a free verification (abbreviated certificate for military use) of birth was issued to each applicant who stated that it was required for military or recruiting purposes. In addition, verifications of birth, death, and marriage were issued for dependents of men serving in the armed forces as proof of dependency. Almost 5,000 of these verifications were issued. During the year the Division of Vital Statistics assisted the Federal Dependents' Allowance Board in searching over 10,000 registrations in order to check the statements made on applications for allowances. In addition, the Division of Vital Statistics assumed the responsibility of investigating and reporting to the Board all delayed registrations of birth, legitimations of birth, and adoptions of dependents of men in the armed forces. All of these services were done free of cost to either the Dependents' Allowance Board or to the soldier or his dependents. In many instances these investigations involved considerable detailed work and often each averaged about a day's work for the investigator.

Problems of administration of the Division assumed larger importance during the year than previously, because not only was it necessary to train other members in registration-work to help to meet the increased volume of work, but replacements on the staff were necessary because of several enlistments in the armed forces. Duties of the staff had to be rearranged; those with some experience were given new responsibilities and additional temporary staff were employed and trained. The normal work of the Division was maintained, while superimposed on it were the extraordinary demands occasioned by the war.

Another vital statistics problem arising out of the war is the reallocation to the place of residence of the death registrations of members of the fighting forces who are killed or died overseas during their period of enlistment. In co-operation with the Dominion Bureau of Statistics, arrangements were effected with the Department of National Defence for the transmission to that Bureau of all available information on duplicate forms regarding the deaths of personnel of the services. These incomplete registrations are then forwarded to the Department of Vital Statistics in the Province of residence of the deceased, together with the name and address of the next-of-kin. It is the duty of the Vital Statistics authorities in each Province to secure this information of a personal and statistical nature that is not shown on the military or naval record. Upon the completion of the certificate, the Provincial authorities retain one copy for their own file and return the other to the Dominion Bureau of Statistics for statistical analyses. Ultimately, special compilations will be made regarding the personnel in the active armed services.

The year 1940, therefore, opened with the Division working at a high tempo, directly due to the onset of war in the previous fall. The Division adopted the policy of co-operation to the fullest extent with the Federal authorities. The result was a year of unequalled activity due, for the most part, to the war emergency.

The indirect effect of the war upon the Division of Vital Statistics was apparent in the passing of three Acts, which are dealt with in detail under the heading of "Legislation." Similarly, the work done by the Division of Vital Statistics with reference to the handling of the records of Overseas Children has been outlined below.

Legislation.

On December 6th, 1940, the "Change of Name Act" came into effect. As outlined in last year's Annual Report, there was an urgent need for the passage of this legislation for the following reasons: First, there was no law on the subject in the Province. Secondly, law enforcement officials had no way of checking upon persons taking aliases. Lastly, and most important of all, it was found that aliens were changing their names to hide their nationality by the simple procedure of moving from one district to another and then assuming a new name. This Act provided the machinery for the proper recording of changes of name and their correlation with the other records found in the Division of Vital Statistics. It forbids any one save a British subject to change his name. It sets down the legal procedure whereby any British subject, either by birth or naturalization, domiciled in the Province and over the age of 21 may validly change his name.

One important section in the Act requires that every person who during the last twenty years has changed his name in any manner whatever, including naturalization, is required within three months after the passage of the Act to give a written notice of such change to the Director of the Division of Vital Statistics.

Two other Acts were passed during the year which had a bearing upon the work of the Division of Vital Statistics. The first was the "Licence Forfeitures and Cancellation Act," which in effect strengthened the enforcement of the "Vital Statistics Act." This Act is designed to implement the National Registration regulation of Canada. It has special value to the Division of Vital Statistics as it aids in securing registration of births, deaths, and marriages of certain racial minorities within the Province who have a habit of ignoring or disobeying our registration laws and regulations for the protection of the public.

The other Act which was passed was an amendment to the "Evidence Act." It authorizes any designated officer of His Majesty's Naval, Military, or Air Forces to sign a death registration of any member of His Majesty's Forces. The passage of this Act obviates the necessity of the private physician or coroner being required to sign such registration of death.

Overseas Children.

Associated with the war was the movement of overseas children to the comparative safety of this Province. A call was made for homes in which to place these children when they arrived, and offers of hospitality poured into the offices of the Superintendent of the Child Welfare Branch, Department of the Provincial Secretary, who was responsible for the placement of the children.

Plans were laid for the co-ordination of all Health and Welfare Services to assist in the medical screening of the children while they were in the clearing centre and to assist in placing the children in suitable homes. The Division of Vital Statistics gave advice on indexing procedures, the preparation of forms, and the setting-up of the record system in such a way that the existing records of the Child Welfare Branch would not be disturbed.

Environmental information was recorded as to the type of home that was registered, the religion of the occupants, their racial origin, their financial status, whether they lived in a rural or urban community. Similar information was recorded for the children as they arrived, and an endeavour was made to place each child in an environment as much as possible like the one from which they had come. The Division of Vital Statistics acted in an advisory and supervisory capacity in the handling of these records.

Statistical Presentation.

With the expansion of modern public-health administration in the Province, the Division of Vital Statistics has been faced with the fact that it must serve not only as a registration office for births, deaths, and marriages, but also that it must provide a correct statistical picture of the trend of the health of the people of British Columbia. The Division publishes detailed mortality tables in its annual report. The salient facts contained therein are, for

the most part, lost sight of in the mass of statistical information presented. These facts must be sorted, analysed, and interpreted in a graphic manner so that health officials can more readily use statistics as a yardstick to the progress of their public-health programmes. The Annual Report for the year 1939 marks the beginning of efforts in this direction. Additional tables were shown in the statistical summary, which has the purpose of pointing out the pertinent facts regarding the causes of death in the Province. This is only the first step in the problem of making vital statistics live and work for the betterment of the health of the people of the Province. In the future the Division of Vital Statistics will be placing more and more emphasis upon this most important side of its work.

APPENDIX No. 2.

SUMMARY REPORT OF THE DIVISION OF LABORATORIES, 1940.

C. E. Dolman, M.D., Director.

During 1940 the upward trend in numbers of specimens examined, which has obtained over the past seven years, continued to tax to the utmost the facilities of the central and branch laboratories. Apart from the natural increase in the population of the Province, the annually greater dependence of the medical profession on routine laboratory tests and the impact throughout the whole year of war-time conditions upon our work, all of which have contributed to perpetuating this upward trend in turnover, the laboratories assumed a new responsibility in taking over the free distribution of biological products on behalf of the Provincial Board of Health.

At the main Vancouver laboratories 124,942 tests were performed, an increase of 6,636 or 5.6 per cent. over the total for the preceding year. The combined total of tests performed in the various branch laboratories was 39,521, which represents an increase of 10,898 or 38 per cent. over the corresponding total for 1939. Thus, in all, 164,463 tests relating to the diagnosis and control of communicable disease were performed during the year by the Division of Laboratories. The types and numbers of examinations made in Vancouver have been set forth in Table I., while Table II. summarizes in similar fashion the work of each branch laboratory.

Tests relating to Venereal Disease Control.

As in previous years, a high proportion of the work done by the Division related to the diagnosis, control, or exclusion of syphilis and gonorrhœa. No less than 109,554 tests, or almost two-thirds of the Division's total turnover, related to these diseases.

The Kahn test was retained as the routine serodiagnostic procedure for syphilis, being supplemented by the Hinton and Kline tests whenever the Kahn reaction was doubtful or positive, or whenever a suspicious clinical history was noted on the requisition form on specimens reaching us from private physicians. On the other hand, Kahn, Hinton, and Kline tests were done on every blood specimen reaching us from the Division of Venereal Disease Control. This apparent discrimination as between the facilities offered to private and clinic physicians and their patients is in part merely an example of the compromises we are continually obliged to make between our desire to provide the utmost in laboratory aids to diagnosis and the quenching effect upon this desire of our miserably inadequate accommodation. In other words, we have neither space nor staff to undertake multiple serodiagnostic tests on all blood specimens reaching us.

We have also had to bear in mind that in comparison with the physician in private practice the physician attached to the Division of Venereal Disease Control generally had far better records of his patients and is much more familiar with the significance of the discordant readings which are occasionally encountered when a specimen is submitted to multiple serological tests for syphilis. However, had the war not intervened, an increasing proportion of serological reactions falling in the doubtful zones was to have been expected, owing to the greater effectiveness, as judged from the standpoint of reduction in reagin titre, of the modern, intensive chemo-therapeutic method of attack upon syphilis, and also to the higher proportion of syphilitics who persist with this treatment to the end. If the war does not

slow up, or eventually reverse this trend towards more and more "Kahn-doubtful" reports, the desirability of performing multiple tests on all specimens might become very pressing. Meanwhile, we are doing the utmost possible in this regard, and it is gratifying to record that private physicians and the Division of Venereal Disease Control alike are apparently very appreciative of the work we perform under such serious difficulties.

There is reason to believe that our technique and reading of these important tests is at a high level of accuracy. We await with interest the results of the survey now being conducted under the auspices of the Laboratory of Hygiene, Department of Pensions and National Health, Ottawa. All the main public-health laboratories in Canada, including our own, which engage in the serodiagnosis of syphilis were sent samples of the same pooled serum specimens from syphilitic and non-syphilitic patients. The different laboratories performed their customary tests thereon, forwarding the reports to the Laboratory of Hygiene for analysis and comparison. This survey, which is continuing into 1941, should yield valuable information respecting the reliability of the various methods currently in use throughout Canada.

The steady increase in the numbers of blood specimens sent in each year for Kahn tests continued during 1940. In the Vancouver laboratories alone, in 1940, 63,080 serodiagnostic tests for syphilis were performed on 43,840 blood specimens, as compared with 21,955 Kahn tests on the same number of specimens in 1935.

In view of the crucial importance of laboratory tests in the diagnosis and control of syphilis, and the comparative frequency with which unsuspected cases of the disease are first revealed in the laboratory, the Division of Laboratories has always urged a greater resort to the Kahn test as a routine procedure, despite the added burden thereby entailed. For several years all pregnant women attending the ante-natal clinic of the Out-patients Department of the Vancouver General Hospital have been Kahn tested. Likewise, samples of cord blood have been sent to the Vancouver laboratories from every infant born in the General, Grace, and St. Paul's Hospitals. Interesting statistics bearing on the apparent incidence of syphilis among certain population groups in Vancouver have thus been accumulated, which it is hoped to publish when a ten-year period has been covered.

On various occasions throughout the year, efforts were made in conjunction with the Division of Venereal Disease Control to revive the issue of compulsory Kahn-testing of recruits to the armed forces. Unhappily, little headway seems to have been made with the authorities concerned, although the arguments in favour of routine testing, which have always seemed convincing enough to up-to-date public-health officials, have gained weight with the apparently upward trend in the incidence of syphilis.

Gonococcus cultural facilities were provided again for the Division of Venereal Disease Control at Vancouver and Victoria. Certain difficulties arose during the year in correlating clinical and laboratory findings, but these arose largely from attempts to extend cultural methods to types of patients not covered by the initial undertaking. When colonies giving a positive oxidase reaction are present on plates derived from patients known to have had gonorrhœa, but who have recently shown no clinical or direct microscopic evidence of infection, it may fairly be presumed that the colonies concerned are gonococcal. The wisdom of restricting cultural facilities to patients in this category became apparent as soon as the method was applied to the diagnosis of suspected gonococcal vulvo-vaginitis in children. In many such instances atypical colonies developed giving either the characteristic or a modified oxidase reaction. In the absence of a virulence test for gonococci, permitting pathogenic gonococci to be differentiated from possible non-pathogenic forms, as well as from the other Gram-negative diplococci, the laboratory's only recourse is to report such findings as "Suspicious" or "Doubtful." The comparative unhelpfulness of such reports to the clinician can only be remedied through the patient correlation of epidemiological and laboratory data. The isolation of one atypical culture from an individual to whom definite cases of gonorrhœa were later traced would invest every isolation of similar cultures with new significance.

Such difficulties as have arisen in gonococcus culture work do not detract from the great usefulness of the method in properly trained hands and when restricted to the appropriate types of cases. In view of the difficulties facing this Division, it should be deemed no mean achievement that three years after offering and commencing this service for the Division of Venereal Disease Control, we remain the only Division of Laboratories in Canada regularly performing gonococcus cultures. At the same time, in view of the difficulties which have

arisen even with a selected clientele, it would clearly be unwise to change our initial policy of not extending cultural facilities to the private practitioner, and of discouraging the smaller branch laboratories from undertaking gonococcus cultures.

Agglutination Tests.

The total number of agglutination tests performed during the year showed a relatively slight increase. Some progress seems to have been made in reducing the tendency of physicians to requisition tests for every circulating agglutinin as a preliminary to all other investigations of their patients. The lesser number of requests for tests for the presence of agglutinins against *B. dysenteriæ* is especially satisfactory, for bacillary dysentery (which, according to our laboratory findings, appears to show a rising incidence in this Province) can rarely be diagnosed by agglutination tests. Cultural examinations of fæces specimens are very much more intricate and time-consuming than Widal tests, but to establish the diagnosis of bacillary dysentery stool culture is essential.

During the year we noted several instances of negative Widal reactions despite the isolation of typhoid bacilli from the fæces. A careful but somewhat inconclusive investigation was made into the possible causes of the relative insensitivity of the "O" suspensions prepared in the Vancouver laboratories. It appears probable that typhoid fever with a negative or low-titre Widal reaction is less rare than has been traditionally supposed. Earlier, and more frequent, resort to stool cultures in all cases where symptoms point to infection of the intestinal tract might well result in eventual verification of this point.

As in recent years, all blood specimens sent in for Widal tests were set up against suspensions of *B. typhosus* (H and O), *B. paratyphosus* (A and B), and *Br. abortus*. The routine inclusion of this last antigen in the series proved well warranted by the fact that of the ten cases of acute brucellosis uncovered in the Vancouver laboratory during the year by high serum titres of *brucella* agglutinins, in only one was the correct diagnosis apparently suspected. Among 1,573 blood specimens examined, forty-six, or 2.9 per cent., gave complete agglutination with a standardized *Br. abortus* suspension in a titre of 1:20 or higher. How many in this group may have had the milder clinical forms of brucellosis is of course unknown; but there is no evidence to suggest that the incidence of milk-borne brucellosis in Vancouver and vicinity is declining. In Victoria and vicinity, where the percentage of raw milk consumed is higher than in Vancouver, there may well be a correspondingly higher incidence of human brucellosis. This is suggested by the results of an agglutinin survey carried out under the direction of Dr. McCurdy at the Victoria Royal Jubilee Hospital laboratory, in which over a period of six months blood serum specimens sent in for Kahn tests were titrated for *Brucella* agglutinins. Of 2,425 specimens, no less than 10 per cent. gave complete agglutination in serum dilutions of 1:20 or higher.

In the Vancouver laboratory, as in previous years, raw milk samples collected from delivery wagons, and brought in by City Health Department Inspectors for routine colony counts and coliærogenes tests, were also submitted to titration of *Brucella* agglutinins in the whey. Since these titrations have never been officially reported to the city, but were begun primarily for our own interest, they are not listed in Table I. The findings have, however, been of sufficient interest to be incorporated in a series of three papers by members of the staff, which have appeared over the past few years in the Canadian Public Health Journal. Roughly half the specimens collected monthly throughout 1940 from every distributer of raw milk in Vancouver showed the presence of *Brucella* agglutinins to whey titres of 1:25 or higher. Moreover, those patients with acute brucellosis were found, in many instances, to have regularly consumed raw milk from a dairy having a bad record in respect of the presence of specific agglutinins. The apparent failure of the local health authorities to take any effective action in response to our reports on positive dairies, and the heavy pressure of excessive routine-work, decided us against carrying out cultural surveys (such as had been made in two previous years) for the isolation of *Br. abortus* from raw milk samples from dairies, incriminated (on epidemiological or serological grounds) as probably responsible for cases of human brucellosis.

Cultures.

The numbers of cultural examinations made for B. tuberculosis and for micro-organisms of the typhoid group almost doubled during the year. Such tests involve a disproportionately

heavy expenditure of time and trouble. This is especially true of stool cultures for the typhoid-paratyphoid-dysentery group of bacilli, which entail, for their successful carrying-out, the use of several selective media and numerous confirmatory tests, both biochemical and serological in nature. Conscientious and skilful technique is nowhere more essential to success than in the isolation and identification of pathogens from fæces. Those branch laboratories having a comparatively small demand for stool cultures can hardly be expected either to maintain an adequate stock of all the various media required or to be thoroughly familiar with all the difficulties encountered in this type of work. Towards the end of the year the Vancouver laboratory therefore expressed its readiness to take over from the branch laboratories the examination of all specimens of fæces which they felt unable to cope with. However, it was not thought desirable to discourage initiative by insisting that stool-culture work should be exclusively carried out in Vancouver. This new policy is reflected in the fact that of 843 examinations of fæces made in Vancouver for the typhoid-paratyphoid-dysentery group of bacilli, 296 or 35 per cent. reached us from sources outside the city; whereas only about 15 per cent. of our total tests of all kinds related to specimens reaching us from the Province at large.

Apart from the more conventional tests for confirmation of their identity, every strain of *B. typhosus* isolated was typed by means of Craigie's bacteriophages, a method which we were the first in North America to apply to public-health laboratory practice, and of which we remain sole exponents among the Provincial laboratories of Canada. The phage-typing methods, on various occasions during the year, provided extremely important epidemiological clues which, if followed up, might have revealed several typhoid carriers whose prevalence in British Columbia (as judged by the unusually wide variety of types of *B. typhosus* recovered from sporadic cases and in small outbreaks) should be a matter of some concern. The need for a well-trained Provincial Epidemiologist, operating in closest co-operation with the Division of Laboratories, and preferably quartered with the Vancouver laboratory, becomes increasingly apparent each year. On two occasions, the benefits to be expected from such an appointment were amply demonstrated, when the services of Dr. L. E. Ranta were loaned to the Provincial Board of Health by Connaught Laboratories and the Department of Bacteriology and Preventive Medicine at the University of British Columbia. Dr. Ranta's investigations of two small outbreaks of typhoid fever, one at a mental hospital and the other in a logging camp, in conjunction with work done in the Vancouver laboratory, led to identification of an unsuspected carrier and the cessation of both outbreaks, as well as opportunities of valuable health teaching and specific immunization. In British Columbia only one municipality has a chlorinated water-supply, while no municipality has compulsory pasteurization of milk; there are numerous instances of faulty sewage-disposal systems; Oriental and Indian groups present special infection hazards to themselves and their neighbours; and evidence has already accumulated of a reservoir of carriers with an unusually varied range of types of *B. typhosus*. In a Province with so many potential hazards of enteric infection, the need for a full-time epidemiologist seems paramount.

Cough-plates for *H. pertussis* showed a diminution in numbers during the year and although this was chiefly due to an unusually low incidence of whooping-cough during the winter and spring months, it is apparent that medical health officers and pediatricians should make greater use of the cough-plate method of diagnosis. Admittedly, collection of the large amounts of blood which must be incorporated in the medium for successful growth of *H. pertussis* presents formidable difficulties. Few of the branch laboratories have facilities or resources for keeping a sheep as a source of blood, while human sources are not always available when needed. Even the main laboratory in Vancouver has had its capacity for improvisation severely taxed by this necessity for a generous supply of sterile sheep blood to be always available, and present arrangements for the maintenance of sheep at the University are highly inconvenient and of uncertain continuity. Notwithstanding these difficulties, we have repeatedly drawn attention to the importance of the cough-plate in the early diagnosis of whooping-cough, especially since the more extensive use of pertussis vaccine may tend to increase the numbers of mild, atypical cases diagnosable only by the cough-plate, but yet capable of giving rise to other cases of severe and typical whooping-cough. In other words, for the fullest advantages to accrue from more widespread use of pertussis vaccine it is essential that there should also be more frequent resort to cough-plate diagnosis.

The considerable increase recorded in miscellaneous cultures made in Vancouver was largely due to examinations of throat-swabs and cerebrospinal fluid specimens for meningococci. All meningococci isolated were submitted to mouse virulence tests by the mucin method in the Department of Bacteriology and Preventive Medicine at the University of British Columbia. Owing to lack of space for laboratory animals, it was impossible for us to undertake this work at Hornby Street, and we were fortunate indeed to be able to call upon the University facilities for help in this connection.

Bacteriological Analyses of Milk and Water.

Throughout the Division, but especially among certain of the branch laboratories, a notable increase was shown in the total numbers of bacteriological examinations of milk and water samples. In the Vancouver laboratory the increase was largely attributable to special tests being made for military authorities, or in view of war-time conditions; but with the branch laboratories the increases were on the whole due to clearer local recognition of the desirability of systematic and regular laboratory checks of milk and water supplies. The importance of such checks was particularly well demonstrated in the Kelowna laboratory, whose findings, handled in a tactful but convincing fashion by the Director of that branch laboratory (who happened also to be the Medical Officer of Health) formed the basis of arguments which led to the establishment in that city of the first chlorinated municipal water-supply in British Columbia.

Despite the undoubted value of these milk and water examinations, when laboratory findings are intelligently interpreted and followed up, the routine performance of total colony counts, or even of *Coli-ærogenes* tests, are in themselves of dubious significance. In Vancouver, for instance, we would prefer to cease doing routine bacterial counts on raw milk samples and instead to perform the phosphatase test on pasteurized milk samples. But so long as raw milk continues to be distributed in this city by nearly fifty different dairies some laboratory check must be maintained; and since we cannot, under present conditions, cope with both bacterial counts and phosphatase tests, adoption by us of the latter means of verifying satisfactory pasteurization must await adoption by the city of a by-law for the compulsory pasteurization of milk.

A similar kind of dilemma faces us in connection with bacteriological analyses of water. We are well aware that a sanitary survey of the source of a water-supply would frequently yield far more reliable information respecting its probable safety for drinking purposes than is afforded by a bacteriological test of a single sample. Requests from farmers or school teachers who have heard that the laboratory can, by a simple test, verify the safety or otherwise of the water from the well on their farm or school premises, are difficult to refuse, without upsetting hard-won confidence in sanitary principles. We endeavour to compromise by emphasizing, on our report forms for water examinations, that the results of a single test furnish no conclusive evidence and that laboratory results should be considered only in conjunction with the findings of a sanitary survey of the water source. Further, all members of the general public applying for water examinations are urged to endeavour to arrange for such a survey to be made by a competent person, preferably the local Medical Officer of Health, the Public Health Nurse, or a sanitary engineer. Failing success in this (rarely attained), the applicant is advised to make such a sanitary survey himself, and simple verbal or written instructions as to how this may be carried out are given when circumstances permit. Finally, no samples are examined unless they have been collected in the official laboratory containers, which are accompanied by explicit instructions relating to the method of collection.

Chemical analyses of water have been reduced to a minimum during the year. Except where a public-health issue is clearly involved, we have been compelled to refer requests for chemical analyses to commercial firms or to the Provincial Analyst at Victoria. This decision is regretted, because certain other public-health laboratories across Canada undertake chemical analyses of water samples, while the Director of the Division is, curiously enough, a member of the Standing Committee on Chemical Analysis of Water of the Canadian Public Health Association. But these examinations require an altogether disproportionate amount of time, and are usually of more commercial than sanitary import. So long as the Assistant Director, Miss D. E. Kerr, who is also our chemist, is so fully occupied with work of more immediate urgency, our present policy must stand.

Distribution of Biological Products.

Some time ago, it was generally agreed within the Provincial Board of Health that the function of free distribution of certain biological products to practising physicians and authorized health officials could best be carried out from the central office of the Division of Laboratories in Vancouver. From the standpoints of both logic and economy, it seemed that the laboratory, which is, in many ways, in closest and quickest touch with the general communicable disease situation throughout the Province, should handle the distribution of products concerned with the specific control of communicable disease. Knowing our staff to be fully preoccupied, it was not without misgivings that we finally assumed this new responsibility in the autumn, especially since the list of products available was expanded by the inclusion, among other products, of pertussis vaccine and prophylactic doses of tetanus antitoxin. However, it is gratifying to record that this new function was taken over with surprisingly few complications to ourselves, and with great advantages to the profession and public resulting from promptitude of dispatch, consistency of policy, and economy of administration.

The Division did not take over the distribution of drugs used in the treatment of prophylaxis of syphilis and gonorrhœa, or of tuberculin, which continued to be handled by the Divisions of Venereal Disease Control and of Tuberculosis Control respectively. For sound reasons, these Divisions preferred for the present to retain control of the distributing arrangements for products which play so important a part in their own special programmes of disease-prevention. Nor was it possible for us to undertake the distribution of biologicals during 1940 for physicians and health officials practising within the City of Vancouver and certain adjacent municipalities. The reasons for our inability to extend the same liberal range of products to the City of Vancouver as to the remainder of the Province were primarily financial; but by the end of the year negotiations towards securing a uniform policy throughout the Province had made progress, and by early 1941 this Province-wide policy was in force.

Apart from the extra office-work involved in this new function, considerable correspondence relating to biological products was entailed for the Director. There were frequent inquiries about immunization methods, the potency and outdating of products, and the storing of stocks of biologicals in places more or less remote from Vancouver. The opportunity was welcomed, wherever it presented, of instructing correspondents in the correct modes of use of these valuable prophylactics. The general level of understanding of the principles underlying their use appears fairly high but there are lamentable exceptions, and from the faulty terminology frequently employed when requisitioning products it would seem that few indeed are the physicians and nurses who understand their composition and mode of manufacture. Our latest requisition form, on which are printed the proper designations of all products available, should carry some teaching value in respect of correct terminology.

After two years of comparative freedom from measles, the Province, and particularly the Vancouver district, was visited by an extensive measles epidemic, commencing in the early winter of 1940 and extending into the spring of 1941. The success attending use of human convalescent measles serum, prepared and distributed by the Vancouver laboratory during the severe epidemic of 1937–38, no doubt led physicians to use this product extensively. Approximately 100 doses were distributed in the last two months of the year. Most of the blood samples were collected from patients on the Isolation Wards of the Vancouver General Hospital, consignments from Duncan and Nanaimo alone reaching us from sources outside the city. Constant concern over whether the supply of new blood reaching us could cope with the fluctuating demand for serum, and over whether the final product would prove sterile when tested, confirmed our strong disapproval of having to carry this responsibility. No biological product should be prepared under the conditions of overcrowding which now obtain in the Vancouver laboratory. In preparing the convalescent measles serum, the processes of centrifugation, filtration, filling, and sterility testing have had to be carried out by the Chief Bacteriologist, Miss M. M. Malcolm, in the same small laboratory in which she performs all the agglutination reactions for typhoid-paratyphoid infections and brucellosis, gonococcus culturing, and dark-field examinations for the spirochæte of syphilis. Although extremely satisfactory results have been obtained from the serum prepared and distributed by us, it is felt that until our accommodation is very much improved further supplies of human measles convalescent serum should be sought from another source.

Branch Laboratories.

The branch laboratories, with the single exception of Nanaimo, all showed substantial increases in their turnovers during 1940, ranging from roughly 6 per cent. for Kamloops to about 80 per cent. for Victoria. Although the extent of these increases was largely conditioned by special local circumstances, the general trend of public-health laboratory-work is undoubtedly upward, in the branch laboratories no less than in the Vancouver laboratory. In Victoria, there were heavy increases in serological tests for syphilis, and in smear examinations for tubercle bacilli, attributable to the intensive local programmes of the Divisions of V.D. and T.B. Control. Extra tests of various kinds on behalf of the armed forces, and a large number of examinations for Brucella agglutinins in blood samples sent in for Kahn tests, also contributed to the marked expansion in the work of the Victoria laboratory. Although these routine examinations for Brucella agglutinins proved so time-consuming under the pressure of more urgent work that it was reluctantly decided to discontinue them at the end of the year, they undoubtedly served a useful purpose in identifying several unsuspected cases of acute brucellosis, and in revealing to practising physicians, public-health officials, and even to laymen, the high incidence of chronic and subacute brucellosis among a population drinking a high percentage of raw milk from herds heavily infected with Bang's disease. Of 2,425 Kahn blood specimens tested in the Royal Jubilee Hospital Laboratory at Victoria, roughly 10 per cent. gave complete agglutination of a standardized suspension of *Br. abortus* in serum dilutions of 1:20 or higher.

The decreased turnover at the Nanaimo laboratory was primarily due to the smaller number of Kahn blood tests and of smear examinations for gonococci. This in turn resulted from the replacement of the former system of police inspection, with so-called medical examination, of professional prostitutes, by a policy involving suppression of prostitution through closure of brothels and through general enforcement of the law respecting such traffic. The rarity of positive findings for venereal disease at the Nanaimo laboratory, since the local adoption of a vigorous campaign aimed at suppression, has in itself provided striking testimony to the public-health value of such measures to the community adopting them.

In August Mr. K. Raht, in charge of the branch laboratory at Trail, intimated that increasing pressure of other duties made it necessary for him to discontinue the public-health laboratory-work which he had carried out for several years under subsidy from the Provincial Board of Health. Late in August the Director visited the branch laboratories at Kamloops, Kelowna, Trail, and Nelson, and was able to effect an arrangement whereby the work which had previously been handled at the Trail laboratory should be diverted in respect of fæces examinations, Kahn tests, and certain other tests to the main laboratory in Vancouver; while milk and water examinations, throat-swabs, and other work involving specimens of a more perishable nature, or in which a report was urgently required, should be sent to the branch laboratory at Nelson. A slight revision was made in the grant to the Nelson laboratory to cover this arrangement, which has proved satisfactory to all concerned.

This visit provided a valuable opportunity for discussing with the Directors of the branch laboratories concerned general problems of organization and finance, as well as more technical matters bearing on laboratory methods and on the kinds and scope of tests to be offered. The new arrangements in regard to distribution of biological products were also explained, and each of the four inland laboratories were glad to be constituted official storage depots for redistribution of emergency products.

In general, a very satisfactory standard of work was noted, the chief apparent weaknesses being in the field of bacteriological analyses of milk and water supplies. Owing to their being only partly concerned with public-health work, and to their intimate relations with the local medical profession, hospital boards, and the public, it seems preferable that the branch laboratories should be permitted some degree of latitude in making arrangements for the regular testing of the milk and water supplies of their respective communities. Laboratory tests are too often expected to furnish definite evidence of the safety or otherwise of a milk or water supply. No such tests can possibly substitute for regular sanitary surveys of sources of water-supply, or for the frequent inspection of dairy herds, barns, and premises; and the public-health organization of the Province seems lamentably deficient in the degree of direct supervision exercised over these vital services. Pending enlargement of the existing

Division of Sanitary Engineering of the Provincial Board of Health, the Division of Laboratories will attempt to lessen the gravity of this deficiency by extending its programme of routine bacteriological tests of water and milk supplies, so that the more serious health hazards to the community from these sources may be revealed.

Apart from this special trip of the Director to the four inland branch laboratories, the Victoria laboratory was twice visited, while we were frequently visited in Vancouver during the year by Mr. George Darling, in charge of the Nanaimo laboratory, and twice by Dr. F. P. Sparks, who directs the Nelson laboratory. Monthly reports were received summarizing the public-health work done by each branch laboratory, and there was of course an extensive correspondence between the Vancouver headquarters of the Division and the various centres. We were especially pleased to have with us in Vancouver for a week last summer, Dr. J. M. Hershey, Director of the South Okanagan Health Unit, who also directs the work of the branch laboratory at Kelowna. The Kelowna laboratory undoubtedly profited in many ways as a result of Dr. Hershey's week with us, just as the Nelson laboratory benefited from the three weeks spent with us in the preceding summer by Miss Johnson, the senior technician at the Kootenay Lake General Hospital. It is very regrettable that our accommodation difficulties prevent us from arranging each year for one or more representatives of the branch laboratories to spend at least a week in Vancouver, familiarizing themselves with new tests and revised techniques. Correspondence provides no adequate substitute for personal experience.

General Comments.

The year was outstanding not only for the record total of work done under deplorable conditions of accommodation, but especially for the fine spirit animating the whole staff, which resulted in the work being accomplished so efficiently that our reports were disputed on very few, if any, occasions. It is gratifying indeed to note the steady enhancement in the prestige of the Division, both locally and farther afield. Efficiency alone could hardly have brought this about, and the research attitude and accomplishments for which we have resolutely striven are believed equally responsible. Since all of the technicians in the Vancouver laboratory are University graduates, many of them having an Honours B.A. degree in bacteriology, it should not be surprising to find them approaching their day's work from a research rather than a routine standpoint. But good academic qualifications among a staff do not always ensure either efficiency or a research approach. That we can justly and without exaggeration claim a notable reputation for the Vancouver laboratory, despite its comparatively small size, and its perennial physical obstacles, is chiefly due to the splendid examples set by Miss D. E. Kerr, Assistant Director, Miss M. M. Malcolm, Chief Bacteriologist, and to the four senior technicians, Misses V. G. Hudson, E. M. Allan, D. E. Helmer, and J. McDiarmid.

The Director has often regretted that the range of titles laid down for the staff of the Vancouver laboratory at its institution in 1931 offered little hope for promotion among the technical staff, all of whom (apart from the Director, Assistant Director, and Chief Bacteriologist) were ranked as Bacteriological Technicians. The technical staff has enlarged over the years, so that there were in 1940 nine persons whose years of service ranged from a few months to ten years, all of whom carried the same official rank of Bacteriological Technician. We are pleased that efforts made during the year to promote certain senior technicians to the rank of Bacteriologist or Serologist, were favourably received.

The Director was invited to address the annual meeting of the Canadian Public Health Association, held at Winnipeg in September, on the topic "The Present Status of Milk-borne Disease Hazards." Incorporated in this paper are the results of special work done by several members of the staff, notably by Miss Kerr and Miss Hudson, a fact which it will be a pleasure to acknowledge again at the time of publication. The Director also attended the annual Christmas meeting of the Laboratory Section of the Canadian Public Health Association, where he acted as chairman of the meeting, and was elected chairman of the Section for the ensuing year. While in Toronto, he presented the following two papers: "Preliminary Observations on the Survival of *S. typhi* in Canadian Cheddartype Cheese," . . . Ranta, L. E., and Dolman, C. E.; and "A New Phage and a Susceptible W Form of *S. typhi* Isolated from a Typhoid Fever Case," . . . Dolman, C. E., Kerr, D. E., and Helmer, D. E. Both these papers will be subsequently published. An earlier presentation, before the same Association, of unusual findings in connection with the phage-susceptibility method of typing

S. typhi was published during the year, namely, " Two Phage-susceptible Types of *B. typhosus* Isolated from a Typhoid Fever Case." Helmer, D. E., Kerr, D. E., Dolman, C. E., and Ranta, L. E. Canad. Pub. Health J., 1940, *31*, 433.

As in previous years the Director addressed several lay and professional groups on various public-health topics.

In successive annual reports complaints of increasing vigour have been made respecting the buildings in which the Vancouver laboratories are housed. Each year the impossibility of our handling any additional work therein has been stressed. Each year, by virtue of initiative in improvisation and readiness to cope with seemingly impossible tasks displayed by the whole staff, a further substantial increase has been absorbed, thus confounding one's predictions. However, there is a limit to all things.

In conclusion, I desire to express my personal thanks to colleagues in the Department of Bacteriology and Preventive Medicine at the University, and in Connaught Laboratories Western Division, who have co-operated in ways too numerous to mention. I would also record my deep appreciation of the loyal, sympathetic, an intelligent spirit displayed by all members of the staff, from Assistant Director down, throughout this trying year.

Table I.—Statistical Report on Examinations done during the Year 1940.

Examination.	Out of Town.	City.	Total in 1940.	Total in 1939.
Animal inoculation	57	209	266	179
Blood agglutinations—				
B. typhosus—				
Flagellar " H " antigen	281	1,316	1,597	1,534
Somatic " O " antigen	281	1,316	1,597	1,534
B. paratyphosus (A)	280	1,315	1,595	1,532
B. paratyphosus (B)	281	1,316	1,597	1,533
B. dysenteriæ (Shigæ)	3	59	62	110
B. dysenteriæ (Flexner)	3	59	62	111
B. dysenteriæ (Sonne)	3	59	62	112
Br. abortus	286	1,323	1,609	1,558
Miscellaneous	2	3	5	3
Cultures—				
M. tuberculosis	80	257	337	185
Typhoid group	296	547	843	476
M. pertussis plates	3	55	58	277
C. diphtheriæ	201	6,658	6,859	6,931
Hæmolytic staphylococci	182	1,525	1,707	1,746
Hæmolytic streptococci	182	1,525	1,707	1,746
Gonococcus	138	3,407	3,545	3,537
Miscellaneous	52	182	234	62
Direct microscopic examination for—				
Gonococcus	1,289	17,050	18,339	15,416
M. tuberculosis (sputum)	1,416	5,175	6,591	6,027
M. tuberculosis (spinal fluid)	7	4	11	25
M. tuberculosis (urine)	39	130	169	121
M. tuberculosis (pleural fluid)	9	21	30	32
M. tuberculosis (miscellaneous)	23	86	109	60
Treponema pallidum (dark-field)	19	133	152	121
Treponema pallidum (nigrosine)	----	3	3	26
Vincent's spirillum	15	254	269	362
Trichophyton (ringworm)	----	49	49	69
Helminths (parasites)	18	74	92	84
Serological tests for syphilis—				
Blood—				
Kahn	6,151	37,689	43,840	40,737
Hinton	2,743	10,787	13,530	15,607
Kline	1,412	4,298	5,710	4,384
Presumptive Kahns	----	----	----	212*
Cerebrospinal fluid (Kahn)	320	1,503	1,823	2,051
Spinal fluid—				
Routine	278	916	1,194	1,272
Colloidal reaction	313	1,512	1,825	2,051
Milk—				
Bacterial counts	149	1,700	1,849	1,642
Coli-aerogenes	146	1,712	1,858	1,642
Water—				
Total bacterial counts	1,065	625	1,690	1,338
Coli-aerogenes	----	625	625	568
Differential counts	----	625	625	568
Special examinations	177	311	488	554
Miscellaneous tests	52	126	178	159
Antigen distributed—				
Kahn	22	----	22	----†
Hinton	3	----	3	----†
Bacterial	27	----	27	----†
Convalescent serum distributed—				
Measles	12	87	99	10
Poliomyelitis	----	----	----	2*
Totals	18,316	106,626	124,942	118,306

* Discontinued in 1940.

† No record kept prior to 1940.

TABLE II.—NUMBERS OF TESTS PERFORMED BY BRANCH LABORATORIES IN 1940.

Type of Test.	Kamloops.	Kelowna.	Nanaimo.	Nelson.	Prince Rupert.	Trail.	Victoria.	Totals, 1940.	Totals, 1939.
Animal inoculations	----	----	6	----	----	----	----	6	4
Blood agglutination tests	51	166	550	178	67	174	5,608	6,794	1,101
Bacteriological tests of milk samples	68	828	66	149	37	----	----	1,148	456
Bacteriological tests of water samples	93	636	98	101	44	----	----	972	450
Cultures—									
Gonococcus	----	----	----	----	----	----	1,587	1,587	604
Typhoid	18	25	----	24	1	----	113	181	85
Br. abortus	----	26	----	69	----	----	----	95	84
Diphtheria	29	19	166	16	2	----	174	406	902
Miscellaneous cultures	7	59	----	90	----	51	961	1,168	68
Direct microscopic examinations for—									
Gonococcus	542	95	305	422	436	----	3,055	4,855	6,244
M. tuberculosis bacillus (sputum)	719	115	761	680	197	29	4,590	7,091	6,128
Treponema pallidum	----	----	----	2	7	6	----	15	8
Vincent's angina	10	14	11	4	23	----	----	62	58
Miscellaneous smears	52	18	----	7	----	382	----	459	----
Kahn, Wasserman, and other serological tests for syphilis	2,154	408	1,107	894	515	2,099	6,979	14,156	12,117
Spinal fluid—									
Kahn	----	5	48	24	----	40	----	117	121
Routine tests	101	7	90	4	----	----	----	202	103
Mastic	----	----	46	----	----	----	----	46	26
Colloidal	----	3	----	----	----	8	----	11	40
Other miscellaneous tests		----	93	53	----	4	----	150	24
Totals, 1940	3,844	2,424	3,347	2,717	1,329	2,793*	23,067	39,521	----
Totals, 1939	3,641	1,636	4,399	2,151	464	3,536	12,796	----	28,623

* Public-health laboratory services discontinued as from September 1st, 1940.

APPENDIX No. 3.

SUMMARY REPORT OF THE DIVISION OF TUBERCULOSIS CONTROL, 1940.

W. H. Hatfield, M.D., Director.

Prior to the formation of the Division of Tuberculosis Control under the Provincial Board of Health, Government of British Columbia, British Columbia had a high tuberculosis death-rate. A number of factors caused this, such as Indians, Orientals, and the fact that there was no co-ordinated effort to bring this under control, other than some sporadic individualistic efforts to combat this disease.

The British Columbia Government was operating a sanatorium at Tranquille, B.C., and one travelling diagnostic clinic was attempting to cover the whole of the Province. In Vancouver, the Rotary Club had shown a great interest in this work and had started a Rotary Chest Clinic which was eventually taken over by the Vancouver Health Department, which created the Vancouver Public Health Institute for Diseases of the Chest, rendering a diagnostic service to Vancouver and supplying a few beds for the treatment of advanced tuberculosis.

The Government of British Columbia, realizing the danger of tuberculosis and its existent death-rate, found the situation totally unsatisfactory and decided to assume the major responsibility of the control of tuberculosis within the Province and, in July, 1935, inaugurated the Division of Tuberculosis Control, Provincial Board of Health.

Central Administration.

To control tuberculosis throughout the Province responsibility was centralized under the Division of Tuberculosis Control. The total situation was clearly surveyed and a plan of campaign mapped out to fight this disease. The widespread interest was well exemplified by a meeting held in Vancouver, July, 1935, which was attended by a number of people representing the various Provincial groups and organizations. It has been through such co-operative thinking of these organizations and the Government of British Columbia, co-ordinated and directed through the Central Office of the Division, that such satisfactory progress can be reported at the present time.

Reporting of Cases.

Although tuberculosis is a reportable disease, there had been up to the time of the formation of the Division most unsatisfactory reporting throughout the Province. This has been completely changed, and through the case-finding methods of the Division and co-operation of physicians and institutions, Public Health Nurses and local health departments a most complete reporting exists to-day. The Dominion Government co-operated by granting free use of the mails for this purpose. There now exists a Central Registry where all cases of tuberculosis are fully tabulated and classified.

Case-finding.

For the number of deaths that have been occurring in British Columbia, it was immediately realized that there must be many cases throughout the Province that were unknown. The nature of the disease is such that, if the individual is left till symptoms develop, cases are usually found in a far advanced stage.

(*a.*) *Diagnostic Facilities.*—Realizing the need for diagnostic facilities being readily available to people of the Province, the Division now has four Travelling Clinics in place of the one that existed prior to the formation of the Division. These Clinics visit some eighty centres throughout the Province, bringing free diagnostic services to all the rural areas. Wherever an institution of the Division exists—namely, in Victoria, Vancouver, and Tranquille—regular diagnostic facilities exist with every up-to-date and modern equipment to bring the best possible service of this type to the population. Naturally, the number of people examined has increased, and in 1940, for example, 30,522 people were examined by these Clinics.

(*b.*) *Surveys.*—In the last few years many surveys have been carried out, notably in the schools, university, and many industries. Since the Government passed an amendment to

the " Metalliferous Mines Act," making silicosis a compensatable disease, it has been necessary for every underground worker in the Province to be X-rayed annually. Thus, we can say to-day that the mines of this Province are free of tuberculosis.

(*c.*) *Contacts.*—Whenever a case of tuberculosis is found, those who have been in contact with this case are carefully checked for evidence of the disease. This group has proved to be the greatest source of our new early cases.

(*d.*) *Health Education.* — Through the medium of newspapers, pamphlets, booklets, moving pictures, lectures, the radio, and exhibits, every attempt has been made to bring all necessary information about tuberculosis to every one within the Province. It is by teaching people what the disease is, how it acts, and how it may be prevented that each and every individual has been brought into the co-operative plan to reduce the incidence of this disease.

Records.

Naturally, where there was no co-ordination of effort there existed a variety of records pertaining to tuberculosis. These have all been standardized and duplication eliminated. With the aid of the Division of Vital Statistics, records are analysed so that the activities of the Division from week to week can be carefully planned.

With centralized control, it is now possible to circulate these records with patients from Stationary Clinic to Institution, or out to a Travelling Clinic, so that a follow-up of all the patients' activities can be carried out.

Institution Facilities.

One of the most important points in the control of the disease of tuberculosis is the isolation of the infected case. In addition to isolation, treatment must be provided for the individual who has the disease. Science continues to advance and the Division has attempted to keep pace with this, providing facilities for the modern treatment of tuberculosis.

One of the major steps in capital expenditure undertaken by the Government was the construction in Vancouver of a new and modern diagnostic clinic and treatment unit. Since the opening of this new unit a new and complete operating suite was built at the Tranquille Unit. Beds were opened in Victoria, the unit now being in existence at the Jubilee and St. Joseph's Hospitals. The newest bed facilities of the Division were completed during 1940, this new unit being at St. Joseph's Hospital at Victoria.

Although many new beds have been provided for the care of tuberculosis patients, the Province still has not as many beds as exist in most other centres. It was agreed that rather than overexpend in this direction, which requires heavy capital expenditure, every attempt should be made to co-ordinate activities of the Division, reducing institutional stay of the individual wherever possible, and increasing follow-up facilities in the home. By means of a Central Admitting Office, regular staff conferences, and the efficient work of the Clinics, coupled with the co-operation of Public Health Nurses and Welfare Field Service, it has been possible to produce a bed turnover that is only bringing a slight delay in the admission of patients.

Pneumothorax Centres.

In order to facilitate bed turnover and allow the patients to return to their own environment as early as possible, pneumothorax treatment facilities have been extended throughout the Province, until to-day we have some fifty centres in which this treatment, started in institution, can be continued.

Follow-up of Patients.

Central Administration has allowed complete co-ordination between the Division of Tuberculosis Control, other divisions of the Provincial Board of Health, and other departments of government—both Provincial and municipal.

The Public Health Nurses and the Welfare Field Service workers have been most valuable in the development of the follow-up system. The Division now has a supervisor of both Social Service and Public Health Nursing to act as consultant to all nurses and social workers throughout the Province. The patient is now treated not just as an individual but as a member of a family unit.

After-care.

The question of rehabilitation of tuberculosis patients has not been neglected. This problem has loomed as a very large one, and through the assistance of many voluntary agencies a great deal of experimental work has been done in this regard.

In Vancouver, the Vancouver Occupational Industries has been a notable development along this line. A smaller though equally efficient unit exists in Victoria and, through teachers, every possible opportunity is afforded the patient while in institution to receive some practical occupational work.

Finances.

Early in the Government programme it was decided to relieve the municipalities of a considerable extent of the financial burden that they had borne in the past relative to tuberculosis. All diagnostic facilities and work outside the institutions was financed by the Provincial Government. The *per capita* payment for patients in institutions, payable by the municipalities, was reduced. A grant was given to the Vancouver Preventorium annually, as all admissions in this institution are made through the Division of Tuberculosis Control.

All finances of the Division are centralized, thus making for greater economy of operation.

Results.

Resulting from the above, there now exists in British Columbia:—

(*a.*) A central control of tuberculosis problems.
(*b.*) Modern and free diagnostic facilities.
(*c.*) Modern bed facilities, well equipped to give every form of modern treatment.
(*d.*) Some fifty centres where pneumothorax refills can be obtained.
(*e.*) Close follow-up of the patient in the home through district nursing and social service.
(*f.*) Through centralized finance, a careful check of all money spent.
(*g.*) By careful case-finding methods and regular statistical analyses, there now exists a full appreciation of the total tuberculosis problem throughout the Province.

Besides the development of facilities with which to carry on the work of control, the Division has now uncovered a large number of new cases of tuberculosis. Many people are prone to look at death rates and expect that, with control, these will fall immediately. Tuberculosis is a chronic disease, requiring many years to see the results of a preventive programme.

Chart No. 1 portrays total deaths from tuberculosis in British Columbia for a five-year period, divided into age-groups. It is quite apparent that there has been a reduction in deaths in all groups up to the age of 50. From there on, the death-rate has increased. The increased rate over 50 years of age is due to: (*a*) The uncovering of new cases of tuberculosis in this age-group which had remained undiagnosed and who have been, in the past, chronic carriers of this disease, and (*b*) a prolongation of life and cases in the earlier age-groups passing on into the older ones before eventually dying of the disease. This chart typifies the first result that is always seen in any tuberculosis programme that is carried on in an intensive manner.

Chart No. 2 shows the cities of over 5,000 population, giving the tuberculosis mortality rate for two five-year periods. Reduction in rates throughout these cities is very marked.

The Indian Problem.

The problem of tuberculosis among Indians is a serious one throughout Canada, but is more serious in British Columbia than in any other Province in the Dominion. This phase of the work is the responsibility of the Indian Affairs Branch of the Dominion Government. The Province has repeatedly brought the importance of this problem before the Dominion Government, and this year we see the opening of a hospital for Indians at Sardis, B.C.

The Stationary and Travelling Clinics of the Division have co-operated with the Indian Affairs Branch in examining all Indians that the Dominion Department has requested to be checked.

War Effort.

From the cessation of hostilities of the last war to the beginning of the present one, the Division of Tuberculosis Control has co-operated with the Dominion Government with cases coming under the Department of Pensions and National Health.

During the present war we have offered our diagnostic facilities for the examination of recruits. The War Department has set up its own examination departments and all those recruits from British Columbia found to have tuberculosis have been reported to the Division of Tuberculosis Control in this Province.

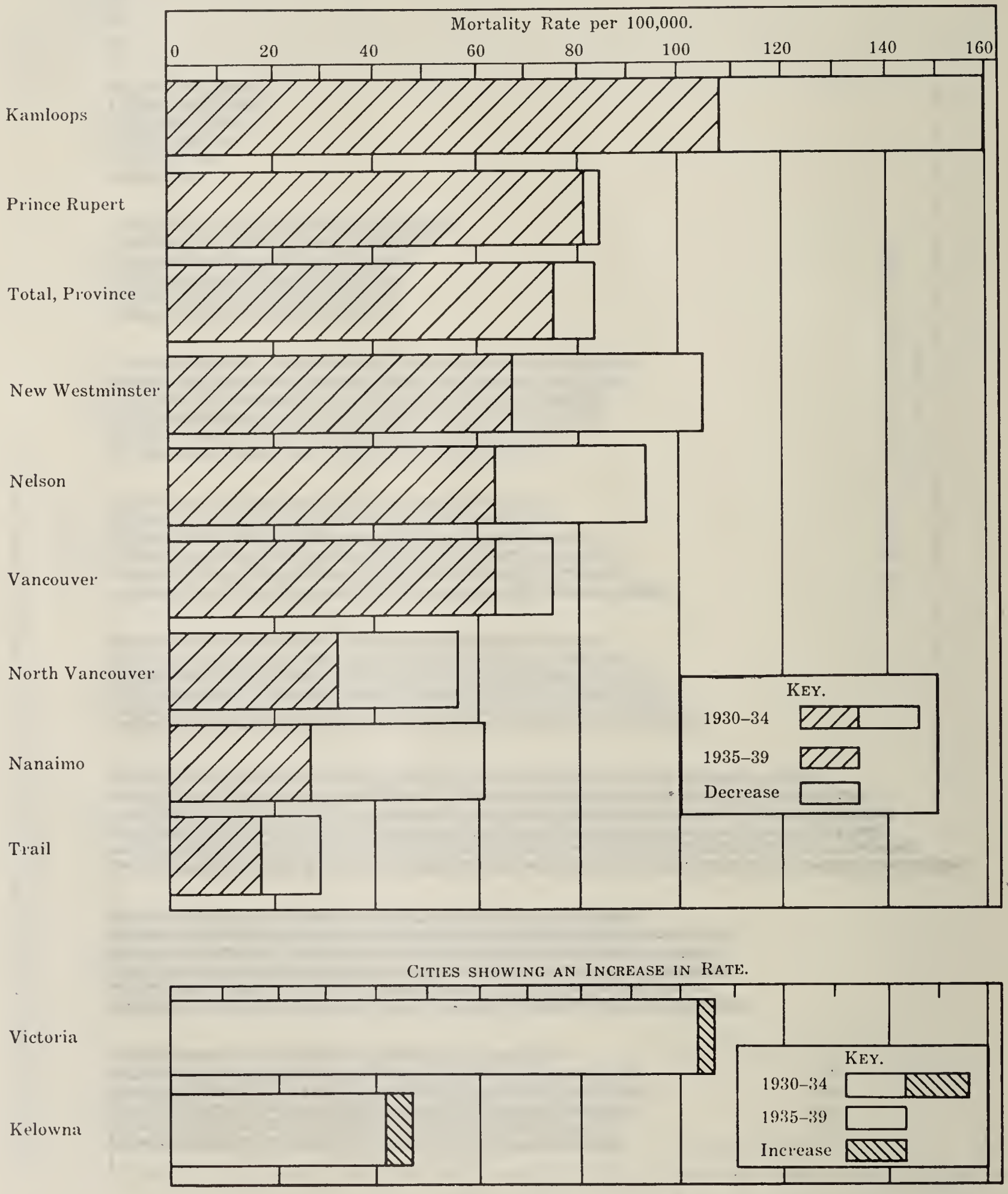
These combined efforts throw a greater burden on the Tuberculosis Division. Our doctors, too, have played a great part. Our young doctors, trained under the modern methods of the Division of Tuberculosis Control, have been requested by the War Department to give their services to the country. This has been done, and has depleted our medical staff.

CHART 1.—TOTAL DEATHS FROM TUBERCULOSIS IN BRITISH COLUMBIA FOR FIVE-YEAR PERIODS, 1931-35 TO 1936-40.

By Ten-year Age-groups (excluding Indians).

SOURCE.—Annual Reports of Vital Statistics, 1931 to 1939.
NOTE.—1940 figures are taken from registrations and must be regarded as preliminary only.

CHART 2.—TUBERCULOSIS MORTALITY RATE FOR CITIES OF 5,000 AND OVER (BY PLACE OF DEATH). AVERAGE RATE FOR TWO 5-YEAR PERIODS, BRITISH COLUMBIA, 1930–34 AND 1935–39.



CITIES SHOWING AN INCREASE IN RATE.

APPENDIX No. 4.

SUMMARY REPORT OF THE DIVISION OF VENEREAL DISEASE CONTROL, 1940.

D. H. Williams, M.D., Director.

The year 1940 was a notable one for the Division of Venereal Disease Control. With the advent of war increased responsibilities in epidemiology relating to the venereal infections among His Majesty's Forces became of paramount importance as a part of the Provincial Board of Health's contribution to the war effort. The educational activities of the Division increased in quantity and improved in quality. A basic six-point educational programme was adopted. Late in the year the reorganization and extension of the record department was undertaken. Commercialized prostitution and quackery continued to receive attention and further steps were taken to deal more effectively with them. There was a definite trend during the year to place increasing emphasis upon the preventive aspects of the control programme. Again, as in previous years, the Division recognized that the progress of its programme represented the co-operative effort of other departments of Provincial, Dominion, and Civic Governments, of private organizations and individuals whose common interest was to stamp out the needless suffering associated with the venereal diseases.

Relationships with the Department of National Defence.

As a natural consequence of the increased hazard of venereal disease in war-time and as a result of its probable effect in reducing the efficiency of both the civilian and military population in their war effort, the Division of Venereal Disease Control and the Department of National Defence during the year developed an increasingly close liaison for the purpose of dealing with this problem. Numerous meetings were held between representatives of the British Columbia Board of Health and representatives of the Army, Navy, and Air Force stationed in the Province. In November a semi-permanent committee, under the chairmanship of the Provincial Health Officer, was formed which included among its members representatives of the medical and legal departments of the Forces and members of the Provincial Board of Health. The function of this committee was to consider from time to time, at the call of the chairman, problems relative to venereal disease control in which the civilian and military forces had a mutual interest.

During the year the Division continued to extend its services to the Department of National Defence. These included diagnostic facilities, epidemiological service, therapeutic material, consultative assistance, and educational equipment. A steady increase was noted in the utilization of these proffered services.

Frequent suggestions were made to the authorities, both in British Columbia and at Ottawa, to adopt the use of routine serodiagnostic tests for syphilis. It was recommended, firstly, on all members of the Forces stationed in the Province; secondly, on all new men applying for war service; and, finally, routine tests, once a year at least, on all men who exposed themselves to the possibilities of fresh syphilitic infection as evidenced by their use of the prophylactic stations and materials. It was pointed out that a routine serodiagnostic test on all new recruits would reveal the presence of syphilitic infection in persons who were quite unaware of their disease and in others who were deliberately concealing it. Among these persons there would undoubtedly exist serious forms of the disease affecting the central nervous system and the cardiovascular organs. A routine test in men who used prophylactic services would reveal potentially communicable early latent infections which would otherwise be missed because of the absence, or relatively insignificant and transitory clinical features, of their primary and secondary stages. In spite of the serious overcrowding problem of the Division of Laboratories, the importance of routine tests for syphilis in the groups referred to was considered such that every effort was put forth to make this service available. In Victoria facilities for the cultural detection of gonorrhœa were used regularly. In Vancouver a few men with primary and secondary syphilis were admitted to the clinic and treated for short periods.

Recognizing that in almost all instances venereal infections among members of the Forces arose in the civilian population, increasing emphasis was placed on the reporting of fresh infections by the Forces along with information relative to the alleged source of the

infection. A special form for this material was provided by the Board of Health. Upon receipt of this information the Division investigated the matter. The utmost tact and diplomacy was used by the trained epidemiological workers in approaching the alleged source. As a result of this work a considerable number of infected women in the civilian population were examined and placed under adequate treatment. During the latter months of the year the efficiency of this important work improved greatly. It became quite clear that illegally-operating commercialized prostitution, in Victoria and Prince Rupert particularly, constituted a serious menace to the war effort. Most of the sources among prostitutes occurred in these two cities.

From the standpoint of therapy the Division provided the Forces with medication for the treatment of gonorrhœa and syphilis. Considerable quantities of sulphanilamide, neoarsphenamine, and bismuth were supplied. Less consultative assistance was asked for during the year than previously.

In the field of education probably the greatest accomplishments were made. Unlimited quantities of the best pamphlets and booklets were made available to the Department of National Defence. Two motion-picture films were shown on numerous occasions to many of the active and reserve units on Vancouver Island and the Lower Mainland. The Illustravox projection film, which the Division loaned the Army a year ago, was shown frequently during 1940. A set of lantern-slides portraying characteristic clinical manifestations of syphilis were given to the Army for lecture purposes. A special pamphlet entitled "Physical Fitness" was prepared and printed for the Forces. Mimeographed information suitable for preparing lectures on venereal disease prevention was sent to the medical officers.

Toward the end of the year the semi-permanent committee, referred to earlier, dealt with the increasing menace of illegally-operating commercialized prostitution to the Forces. This committee recommended that the Attorney-General's Department request law enforcement agencies to close all bawdy houses in the Province and that the Provincial Board of Health institute a lay educational campaign to inform the public regarding the dangers of tolerating these illegally-operating disease dispensaries. Support for the policy of suppressing commercialized prostitution, as required by the Criminal Code of Canada, was received from the Department of National Defence at Ottawa.

Reviewing the relationships between the Division of Venereal Disease Control and the Department of National Defence in British Columbia during 1940 gives reason for gratification and for anticipation of even more satisfactory results in the future.

Education.

The educational programme gathered momentum coincident with the appointment of an Educational Supervisor early in the year and completed a most successful year's activities. A basic plan was drawn up which included among its objectives reaching both professional and lay citizens with its six-point programme:—

(1.) General factual information concerning venereal disease.
(2.) Facilities of the Provincial Board of Health available through the Division of Venereal Disease Control, including diagnosis, treatment, epidemiology, education, etc.
(3.) Need for prenatal blood test.
(4.) Need for premarital blood test.
(5.) Eradication of self-treatment and quackery.
(6.) Suppression of commercialized prostitution.

With the expansion of the programme all means available consonant with resources at hand were utilized. In some cases it followed established lines of procedure and in other instances pioneering was necessary. Large quantities of wide range of high quality educational pamphlets and leaflets were distributed. Two new booklets on Gonorrhœa were composed and sent to all physicians in the Province. A Japanese and a Chinese language leaflet was prepared. To each Public Library in British Columbia was donated at least one copy of "Shadow on the Land" (Parran) and "Syphilis, Gonorrhœa, and the Public Health" (Nelson).

Lectures and film showing continued to attract many citizens. During the year a very effective technique was developed at the Vancouver Clinic. On Wednesday afternoons and on evenings the Clinic was opened to groups interested in seeing the clinic facilities first-hand.

An informal discussion based on a questionnaire, a brief outline of the organization of the Division, a film showing and a tour of the Clinic contributed to approximately a two-hour programme. These proved very popular. Early in the year groups had to be sought after and invited. Later, " bookings " increased without solicitation.

Two new films were purchased. Three copies of " With These Weapons "—a one-reel sound film—were used widely. The Division embarked upon an experiment in film production. This film, entitled " Nine Cents Per Capita," attempted to portray the insignificant cost of the facilities provided to the citizens of British Columbia through the Venereal Disease Division and the excellent return in improved health for this expenditure.

A set of attractive posters for use in the logging, mining, and fishing industries was prepared. Valuable press and radio publicity continued to be available for educational purposes.

Records and Statistics.

To improve the collection, tabulation, analysis, and recording of statistics relating to the prevalence and course of venereal infections in the Province, a study of the existing record system was made in September. Increased use of mechanical tabulation facilities was extended to the Division by the Division of Vital Statistics to provide means of studying clinical, epidemiological, and other facts relating to patients under treatment in clinics. This represented a major scientific improvement in the Division and study was begun in October to take advantage of this opportunity. This study involves a great deal and must, therefore, progress slowly. It should be completed and functioning in the coming year. A new notification form was drawn up for distribution to all reporting agencies in December. A considerable amount of work was done on new record forms and codes for mechanical tabulation. A permanent study of statistics with illustrative graphs was commenced.

Epidemiology.

Recognizing the fundamental importance of epidemiology in the programme throughout the Province, a full-time physician with special training in public health was appointed in charge of this work. This appointment took place in September. The basic work in case-finding and case-holding, which are essential to future Province-wide development, had already been in progress but was improved upon. There was evidence of increasing co-operation of private physicians and other agencies in this phase of the control programme. Epidemiological investigation of alleged sources reported by the military authorities assumed a new importance. New forms were used in November and December for the analysis of the work in order to determine particularly the results in the important groups of early syphilis and all gonorrhœa cases.

The Treatment of Venereal Disease by Non-qualified Persons.

The attention of the Division was drawn frequently to the problem of treatment of venereal disease by non-qualified persons. In spite of the facilities of the clinics and the provision of free medication, consultative and laboratory diagnostic facilities to all private physicians, many individuals continued to treat themselves by means of medication purchased at drug-stores or by seeking the advice of non-qualified persons. A phase of this problem was the advertisement in daily papers of unqualified persons who purported to treat venereal diseases or diseases of the genito-urinary organs. These advertisements were considered to contravene section 10 of the " Venereal Diseases Suppression Act." Through the co-operation of the daily newspapers this type of advertisement was discontinued.

Commercialized Prostitution.

The problem of illegally-operating, disease-dispensing commercialized prostitution continued in 1940 to constitute a serious obstacle to the effective control of the venereal diseases in British Columbia. In spite of the provisions of the Criminal Code many of these bawdy-houses continued to exploit diseased young women. The problem became increasingly acute during the year from the standpoint of national defence and culminated in the action mentioned earlier in this report.

Early in the year the problem of " medical certification " of diseased prostitutes was referred to the Executive Council of the British Columbia Medical Association for attention.

This body supported the stand of the Provincial Board of Health to the effect that the "medical certification" of prostitutes is recognized by health authorities to be scientifically and ethically unsound. The Association recommended that its Public Health Committee inform all qualified physicians in the Province concerning the inherent dangers to the public health of making a statement or giving a letter or certificate which might be interpreted by a prostitute or her exploiters or patrons as evidence of her freedom from venereal disease.

The most intensive efforts toward suppression continued in the City of Vancouver. Here, however, the Division recognized that a group of well-known bawdy-house keepers were still spreading fresh infections among citizens. The Division recommended that the landlords and real-estate agents be dealt with as a means to uproot the apparently entrenched activities of these keepers. A survey was carried out late in the year by members of the staff which revealed that there was free access to at least six well-known bawdy-houses. The results of this survey were made known to the Vancouver City Police Department. A detailed report on juvenile delinquency and moral degeneracy, which had shown an *apparent* increase in 1940 in Vancouver, was prepared in order to forestall any possible effort to use this *apparent increase* as an argument for a return to a policy of toleration of violation of the Criminal Code.

Medication.

The Division was grateful for the continuance of the Dominion Government's annual grant of arsenical for intravenous therapy. During the year the use of oral bismuth for the treatment of syphilis was publicized widely by commercial interests. Steps were taken by the Department to warn physicians against the use of this means of therapy. By mutual understanding with the firms concerned, distribution of the chemical in British Columbia was stopped until such time as the Division considered its use in the best interests of the public health. The staff discussed the feasibility of trying the "Five-day Treatment" of syphilis, but deemed it wise to adopt a conservative attitude in the meantime and watch closely future developments of this method in the hands of other workers. The distribution of silver nitrate for the prevention of gonorrhœal ophthalmia in the new-born was improved. Arrangements were completed for its distribution by the Division rather than by the Central Office of the Provincial Board of Health in Victoria. The attention of the Dominion Government was drawn to the faulty construction of the Novarsan ampoules which resulted in irregular, splintering fracture of the neck and consequent laceration of the fingers of technicians.

Miscellaneous.

A new order form to implement the action of the Provincial Health Officer under section 3 of the "Venereal Diseases Suppression Act" required considerable attention by the Division and the Attorney-General's Department. The opening of the new women's gaol at Oakalla Prison Farm remedied a difficult problem and provided splendid, modern, well-equipped clinic facilities. The fire-hazard at the Vancouver Clinic continued to give concern. Every precaution possible was taken to protect against any mishap. Emphasis was placed on the importance of the physician-patient relationship in a series of weekly staff discussions. An improved policy was adopted as a result of these meetings and put into effect in all clinics. On the basis of the experience at the clinic and elsewhere new regulations regarding the communicability of syphilis and gonorrhœa were prepared and adopted. During the year a number of scientific and lay publications were issued by the Division.

Personnel.

Several important additions to the staff were made in 1940. Two full-time physicians with diplomas in Public Health returned following nine months' training in Toronto at the School of Hygiene and three months' visiting health departments, clinics, and hospitals in the United States. During their field-work special emphasis was placed on venereal disease control programmes. One of these physicians has taken charge of the Department of Epidemiology and Records; the other has assumed responsibility for educational work and the management of the small clinics.

The outstanding beginning in the field of education this year resulted from the appointment of an Educational Supervisor.

A second full-time Public Health Nurse was added to the staff of the Vancouver Clinic.

Problems and Future Developments.

Public enlightenment remains the most stressing problem at present. In its solution lies the greatest return for money expended. A gratifying breakdown in entrenched prudery and sophistry related to the venereal diseases is rapidly occurring and giving way to a new, healthy, receptive attitude on the part of the public. In order that this satisfactory condition be not frustrated, it is important that educational facilities be extended on a Province-wide basis as soon as possible through the channels of professional groups, including physicians, nurses, welfare workers, and teachers.

The vast potential of Health Officers, Public Health Nurses, and Welfare Workers remains essentially untapped for the necessary work of case-finding and case-holding. It is intended in the coming year to begin to utilize the service of these workers. As soon as the central office policy and facilities have been established for this phase of the programme, it will be rapidly extended on a Province-wide basis.

With an increasing need for men in the Forces the Division anticipates during the coming year possible difficulties in maintaining its personnel. It is hoped that professional and technical workers, whose civilian public-health duties are directly and indirectly of importance to the successful prosecution of the war, may be permitted to continue their civilian duties. An efficient personnel, which has acquired its efficiency largely as the result of experience in the Department in the past three years, has contributed much to the war effort. Any replacements by untrained personnel would reflect unfavourably on the assistance given by the Department.

During the coming year it is proposed to extend as many of the services of the Division as is possible to the rural portions of the Province by means of a Travelling Consultant. His function will include assistance in epidemiology, education, and consultation in these communities.

APPENDIX No. 5.

REPORT OF THE PUBLIC HEALTH ENGINEERING DIVISION, 1940.

R. Bowering, B.Sc. (C.E.), M.A.Sc., Public Health Engineer and Chief Sanitary Inspector.

The duties of the Public Health Engineering Division include water-supply, sewage-disposal, milk sanitation, shell-fish sanitation, cannery and industrial camp sanitation, garbage-disposal, investigation of sanitary complaints, and miscellaneous features of environmental sanitation. Valuable assistance is rendered by the British Columbia Provincial Police Force, whose officers are ex-officio sanitary inspectors in unorganized territory. Excellent co-operation is also received from the Division of Laboratories, who do the bacteriological work required by this Division. Chemical analysis of water when necessary has been done by the Provincial Analyst.

For the purpose of clarity this report will deal with each of the several items of sanitation under a separate heading.

Water-supplies.

The nature of the terrain and the climatic conditions prevailing in the Province make the problem of obtaining a water-supply of good potable quality in British Columbia relatively easy compared to that in other Provinces. Centres of population are located close to mountainous watersheds making possible, in most cases, a gravity supply. These watersheds are usually uninhabited and so the chances of dangerous contamination are relatively remote.

In several instances, notably for the Vancouver and Victoria water-supplies, the watersheds have been set aside as health districts by Order in Council. These districts are guarded continually by watershed sanitary inspectors, and no person is allowed on the watershed unless he has a certificate from a medical practitioner stating that he is not a carrier of a disease capable of being spread by water. During 1940 the Lake Coquitlam watershed, supplying New Westminster, and the Arrow Creek watershed, supplying Creston, were created health districts for watershed purposes, and watershed sanitary inspectors were appointed.

In the past it is felt that too much reliance has been placed on chemical analysis of the water and insufficient attention paid to bacteriological examination. However, the latter often shows that certain waters that could be considered safe by the chemical test are contaminated with fecal bacteria; and hence, of doubtful sanitary quality. In addition to this, waters that may have been safe years ago may subsequently have become unsafe due to settlement on the watersheds. It would appear, then, that the better method of testing water would be by bacteriological examination of samples taken at intervals throughout the year. The chemical examination, when indicated, should be used as supplementary evidence as to the sanitary quality of the water. The results of both the bacteriological and chemical tests on the water should be interpreted in the light of a thorough sanitary survey. It is proposed, therefore, that in future, sanitary surveys be made on all public water-supply sources in order to determine their sanitary quality and to suggest any remedial measures that might appear necessary.

Chlorination is now accepted throughout the civilized world as a standard method of rendering water-supplies free from harmful contamination. It is estimated that 85 per cent. of the water supplied by public systems in United States and Canada is chlorinated. The fact that chlorine has not been extensively used in British Columbia is mainly due to the points outlined in the preceding paragraph. However, during 1940 a very definite advance was made when the City of Kelowna installed chlorinating equipment, and thus became the first municipality in British Columbia to have a chlorinated water-supply. It is hoped that during the coming year other centres throughout the Province, whose water-supply may be considered potentially dangerous, will realize the wisdom of installing this means of rendering their water-supply a safe one.

Regarding private water-supplies, many requests are made for analysis of water samples. It is necessary to refuse water samples taken in non-standard containers and to forward standard sterile containers to the interested party for the taking of the sample. In localities where the local Medical Health Officer is readily available it is recommended that he take the sample. In other localities the individual is advised to take the sample, observing carefully the directions enclosed with each container. In addition to this many requests were answered concerning various water-supply problems. A number of sanitary surveys of private wells were made by the Division.

Sewage-disposal.

Most of our larger communities have public sewerage systems. The Provincial Board of Health exercises a control over the installation of sewers, as all sewerage plans and specifications must be approved of by the Provincial Board of Health before construction-work is commenced. Although this method of control is excellent as far as it goes, the fact that the municipality constructing sewers is not required to forward to the Provincial Board of Health the final plans showing completed work makes it difficult for an accurate file to be kept of the actual sewerage-work completed in the Province, since often plans that have been approved are not carried out or are only partially carried out. It is hoped that some reasonable form of agreement on this point may be developed in the near future.

There are relatively few sewage-treatment plants installed, since most of the sewage is disposed of by dilution into salt water or into large rivers. In the Okanagan Valley the treatment of sewage is essential, since there are no suitable bodies of water available for disposal by dilution.

In 1939 the City of Vernon put into operation a modern sewage-treatment plant, consisting of screens, primary sedimentation, sprinkling filter, secondary sedimentation, and separate sludge digestion. This plant has a design capacity of one and one-half million gallons per day. This capacity should meet the growing needs of the community for quite some time. Kelowna also has a sewage-treatment plant which is now operating at full capacity. Although Penticton has no sewerage system at present, some consideration has been given to this problem by the municipal council during the year.

Regarding private disposal of sewage, the septic tank is the most common method in British Columbia. Unfortunately, many of these have not been constructed on proper design principles, and as a result are not satisfactory. The chief nuisance is caused by improper treatment of the septic-tank effluent. In many cases rock-pits are used in unsuitable ground, and in some cases no treatment of the effluent is attempted, with the result that many

nuisances are caused by disposal of septic-tank waste into drainage-ditches. Too many people still believe that a septic tank never needs to be cleaned, and that the effluent is an inoffensive liquid.

Outdoor privies are used in rural communities, and to a certain extent in urban communities. Most of these privies are not fly-tight and as a result the danger of fly-borne infection is present in the summer season. A set of plans and specifications for a sanitary fly-tight privy is in the course of preparation and will be available shortly. In addition, another set of plans and specifications for private sewage-disposal systems is being drawn up in manual form, and which will also be available in the near future.

Garbage-disposal.

The garbage-disposal problem was not studied to any great extent during the past year. The most popular method of garbage-disposal is by dumping upon land; and, unfortunately, there are very few incinerators installed in British Columbia. The only work done by the writer regarding this phase of sanitation during the past year was in connection with inspecting and attempting to locate garbage-dumping sites for several unorganized communities. These included Salmo, Wells, and Castlegar. The problem was still unsolved at Wells and Castlegar at the close of the year, due to the difficulty in finding suitable sites that could be Crown-granted. Another difficulty regarding the garbage problem is the collection of garbage in unorganized communities. This is usually done by a scavenger who charges a monthly fee. If the fee is not paid the garbage is not collected and the result is that little piles of garbage are observed along the highway in the vicinity of large unorganized communities. This problem will have to be tackled as time goes on.

Milk Sanitation.

Since the inspection of dairies is the function of the Department of Agriculture, the principal function of the Division of Public Health Engineering in regard to this important phase of sanitation has been the inspection of pasteurization plants. The pasteurization plants in the City of Victoria were visited in company with the Municipal Milk Inspector. At the request of the military authorities the dairy supplying milk to the troops at Nanaimo was inspected several times and suggestions made to the operator for improvements. A visit was paid to Tranquille Sanatorium to inspect the milk-supply and to suggest a plan for a pasteurization plant. It is hoped that a pasteurizing plant will be constructed during the coming year. The subject of milk sanitation will have to be given more and more attention as time goes on.

Shell-fish Sanitation.

An important phase of shell-fish sanitation in this Province is that relating to the oyster industry. The oyster industry is a growing one and since oysters, which are often eaten raw, may be easily contaminated, both by contamination in the water in which they grow and by faulty methods of handling, sanitary control is necessary both to protect the oyster-consuming public in the Province and the reputation of British Columbia oysters in extra-provincial markets. The Federal Government, through an agreement with the U.S. Public Health Service, has the responsibility of certifying oyster-growing areas and shucking and packing plants handling oysters for export purposes. Due to the nature of the industry, commercial oyster producers operate on foreshore leases. These leases are granted by the Provincial Department of Lands for periods now ranging up to ten years. Before a lease is granted or renewed it is customary for the application to be submitted for approval to the Provincial Health Officer. During the year much thought has been given to the whole question of shell-fish sanitation. Discussions are still continuing with the Provincial Departments of Fisheries and Lands and the Department of Pensions and National Health. I feel sure that ultimately an effective and practical system of safeguarding the public will be worked out.

Cannery Sanitation.

A rapid reconnaissance survey was made in July of a number of the canneries on the coast. A total of fourteen salmon-canneries out of a total of about fifty were visited. In general, the sanitary conditions were found to be fairly satisfactory as far as they could be examined with the amount of time available. Certainly they were much better than one hears

from hearsay report. In reading over reports of sanitary conditions prevailing in earlier years and comparing those conditions with those of to-day, one is struck by the improvements that have been made. A great deal of credit for this improvement is due to the work of the former Chief Sanitary Inspector, Mr. Frank DeGrey, who is known and respected along the entire coast.

When the Provincial Board of Health commenced the sanitary inspection of canneries in 1890, the main sanitary problem was in connection with the insanitary methods of handling fish and of disposal of offal. To-day this problem is not so important, due to the introduction of processes for salvaging the parts of the fish that once were wasted. This processing is done in reduction plants, which themselves have created an odour-nuisance problem. Refinements in methods have reduced the odour-nuisance problem, although it still exists, and complaints are still received.

With the easing of the offal problem due to construction of reduction plants, the Provincial Board of Health directed its efforts to the improving of the sanitary conditions of the camps in connection with the canneries. Water-supplies and housing were greatly improved. As a result of the reconnaissance trip made this year it would seem that the next step forward should be in the matter of housing for the Indians and in some cases to the sanitary disposal of body-wastes. It is proposed that periodic sanitary surveys of the canneries be made, and that surveys of the water-supplies be included.

Industrial Camp Sanitation.

A number of inspections of industrial camps were made by officers of the Provincial Police Force and reports sent to Victoria. In addition, several of these camps were visited personally. Conditions in most of these camps were found to be good. A small outbreak of typhoid fever resulted from the improper disposal of septic-tank effluent from a logging camp into a small creek used as a water-supply by several families in the Alberni district. The camp was visited by the writer and a method of treating the sewage suggested. On a later visit, the suggested improvements had been made and almost ready for operation. Several cases of typhoid fever occurred in a logging camp near Harrison Lake. Although the exact cause was not found it was discovered that although the water-supply used by the camp was satisfactory, that used in the field was liable to contamination from the loggers themselves. This investigation illustrates the importance of observing sanitary principles in temporary field operations as well as in the more permanent camps.

A visit was paid to four of the hop-farms located in the Chilliwack district for the purpose of making a sanitary inspection. The hop industry requires a large number of pickers for about a month each season. About 600 to 1,500 pickers are required on each farm. The hop company maintains camps which consist of large terraces divided into one-room suites for the accommodation of pickers. The pickers supply their own food. Up to four people are housed in each room. This bringing together of a large number of people, many of whom are primitive in their habits, creates a sanitary problem. Some of the camps were in better condition than others, depending largely upon the owners' attitude. A complete report of this inspection is on file. It is proposed that a complete sanitary survey of these hop camps be made and used as a basis for the making of regulations calling for minimum requirements in connection with the sanitary control and housing conditions of hop camps.

Sanitary Complaints.

A considerable number of sanitary complaints were received throughout the year. As many as possible of these were investigated personally and methods of abating the nuisances suggested. Complaints received concerning localities remote from Victoria were referred either to the Provincial Police or to the local Health Officer. There has been excellent co-operation from police officers and Health Officers in connection with these complaints. There is still a good deal of confusion in the mind of the public as to what constitutes an actual health hazard and what constitutes merely a nuisance to the sense of sight and smell.

Co-operation with Armed Forces.

In keeping with the policy of the Provincial Board of Health to render all assistance possible to the armed forces, the Division has, on several occasions, assisted the military

authorities in solving sanitary problems. This included inspection of pasteurization plants, water-supply sources, and consultations regarding sewage-disposal methods.

General Observations.

During the past year much thought has been given to the whole question of sanitary engineering problems in British Columbia. We have not sufficient knowledge on record of either our public water-supply systems or public sewerage systems. It is proposed that sanitary surveys be made of these as rapidly as time permits and opportunities present themselves. The ultimate aim in this connection will be a record of all sanitary features of each so that methods of improvement can be devised and recommended to the proper authorities. With regard to shell-fish sanitation, plans for the future depend upon the arrangements which may be made with the Federal Government. With regard to milk sanitation, inspections of pasteurization plants will be made as opportunities develop, with a view to obtaining a complete file on the pasteurization plants in this Province. This is necessary in order to ensure a good quality of pasteurized milk. Inspections of handling methods will be made as conditions warrant. With regard to sanitary inspection of canneries and industrial camps, it is proposed that a long-range programme of sanitary surveys be made as a basis for formulating plans for further improvements. There are numerous other phases of sanitation which must be given further attention as time goes on, including such items as food-handling establishments, tourist camps, and the environmental sanitation of schools.

Relations with other Divisions of the Provincial Board of Health have been most cordial, the Division of Laboratories being especially co-operative in their examination of samples of milk, sewage, and water. The Provincial Police continue to render valuable assistance as in former years. I cannot close without acknowledging my thanks to all members of the Provincial Board of Health for their unstinted and valuable assistance rendered in connection with the work of this Division.

APPENDIX No. 6.

SUMMARY REPORT OF THE GREATER VANCOUVER METROPOLITAN HEALTH COMMITTEE, 1940.

Stewart Murray, M.D., Senior Medical Health Officer.

The development of a co-ordinated and co-operated Public Health Service under a Metropolitan Committee in the Greater Vancouver Area has now completed its fourth calendar year. The plans and programmes so ably made by the late Doctors H. E. Young and J. W. McIntosh in the bringing about and launching of this work have and are bearing fruit. The improved results are indicated in the reactions on the part of private citizens, both individually and collectively, in their desire for health knowledge, particularly of the preventive type, and their willingness to participate in activities designed to insure the prevention of disease.

To maintain and improve the public health in the Greater Vancouver Area, the efforts are directed through two main lines of endeavour: First, using those means which prevent illness, by regulating possible sources of infection—for example, milk-supply, improved restaurant control; and secondly, by programmes developed to cause the individual citizen to safeguard his own health.

During 1940, the amount of pasteurized milk sold increased in quantity and the programme for complete pasteurization of all milk and milk products continues. In Vancouver City a revised Restaurant By-law has made possible the grading of eating-places in order to improve the sanitary standards. The form used for grading is adopted where applicable in the other municipalities under the Committee.

In that part of the programme designed to improve the health of individuals—Vancouver City shows the lowest infant mortality rate in its history, namely, 23 per 1,000 living births. The rate for the whole area remains low. This excellent result is in no small part dependent upon the " Well Baby Programme."

The pre-school phase of the work remains essentially unchanged.

Realizing that the health of the school child, both physical and mental, is to a considerable degree dependent upon the knowledge and co-operation of the teachers in carrying out a health programme, a course of lectures has been arranged and given to two groups of teachers. Further groups will receive the course as time permits.

Communicable disease control continues along the usual lines of education and use of biological products. Vancouver City in 1940 experienced complete absence of diphtheria for the first time in its history. The graph of the incidence of diphtheria is one of steady improvement since 1930, but never before had perfection been achieved. An innovation adopted during this year, as a policy, is that of giving a reinforcing dose of toxoid to those children immunized in infancy. Increasingly greater numbers of parents are asking to have their children protected not only against diphtheria but also against pertussis, scarlet fever, and, of course, smallpox.

The programme of assisting in education of the public by general lectures or articles continues to expand. This year one of the city papers has published three articles weekly since April, and another receiving articles from the Greater Vancouver Health League has also included many articles from members of the staff. These articles are in addition to contributions to a local popular health journal, radio broadcasts, etc.

The Division of Mental Hygiene has shown steady development.

The Health Service and Educational Programme in the Provincial Normal School continues with improved modifications.

In the School Health Services a new class-room health record is being tried in selected schools, with the objective of having a more complete picture of each child.

During this past year much time was given to duties resulting from the war. The development of an Air-raid Precaution organization and the examination in first aid of men volunteering as Air-raid Wardens required considerable evening work by members of the staff. The examination of children brought to British Columbia under the British Evacuee programme also gave opportunity for service in this great cause for which we are fighting. The nursing staff is receiving special lectures in air-raid precaution activities.

All phases of the work are well in hand, as indicated by comparison with other areas with similar problems.

The progress of the Metropolitan Health Committee Services is continuous and the New Year was begun with confidence that, in spite of the trying times of war, the good public health will be maintained and improved.

APPENDIX No. 7.

TABLE SHOWING RETURN OF CASES OF NOTIFIABLE DISEASES IN THE PROVINCE FOR THE YEAR 1940.

	Cancer.	Cer. Sp. Meningitis.	Chicken-pox.	Conjunctivitis.	Diphtheria.	Dysentery (all forms).	Encephalitis.	Erysipelas.	German Measles.	Gonorrhœa.	Influenza.	Measles.	Meningitis (Simple).	Mumps.	Paratyphoid Fever.	Pellagra.	Pneumonia (Lobar).	Pneumonia (Broncho).	Pneumonia (unspecif.).	Poliomyelitis.	Puerperal Septicæmia.	Scarlet Fever.	Septic Sore Throat.	Syphilis.	Tetanus.	Trachoma.	Tuberculosis.	Typhoid Fever.	Undulant Fever.	Whooping-cough.	Total.
Abbotsford	6		28					3			145	3		56			7	11				4				1				79	343
Agassiz			40																									3	1		44
Alberni												2										1								2	5
Alert Bay	1		1			2		1			3				1	1		7					10								27
Alexis Creek						10					36	1						11			2					5				13	78
Aliford Bay											34																				34
Armstrong			2						1			2					2	2					1							3	13
Ashcroft			5					2									1	2				7	1								18
Atlin			19																												19
Baynes Lake											2																				2
Bella Bella			1								154				1		4	9													169
Bella Coola			23	9			2				41	1					8	2	1		1		8								96
Blakeburn																															
Blubber Bay											8																				8
Blue River												5																			5
Bralorne	1		2					3			64																			50	120
Britannia Beach	1		5								96	7		1			1	5					1							2	119
Burnaby																															
Burns Lake			32					2			6	1		4				1													46
Campbell River			11	1							52	5					3	5	1												78
Canal Flats																															
Castlegar											44	2																			46
Ceepeecee											9						1		1												11
Chase				2					5		78						2									3				11	101
Chemainus	2		55						6		77	152					1											1			294
Chilliwack	1		10					3	8			2		59			3					18	1					3	1	5	114
Cloverdale																															
Coal Creek																						3	1								4
Cobble Hill			9						2			26																			37
Copper Mountain			2															1													3
Coquitlam			4									2		5																	11
Carried forward	12		249	12		12	2	9	27		849	211		125	2	1	33	56	3		3	33	23			9		7	2	165	1,845

TABLE SHOWING RETURN OF CASES OF NOTIFIABLE DISEASES IN THE PROVINCE FOR THE YEAR 1940—*Continued.*

	Cancer.	Cer. Sp. Meningitis.	Chicken-pox.	Conjunctivitis.	Diphtheria.	Dysentery (all forms).	Encephalitis.	Erysipelas.	German Measles.	Gonorrhœa.	Influenza.	Measles.	Meningitis (Simple).	Mumps.	Paratyphoid Fever.	Pellagra.	Pneumonia (Lobar).	Pneumonia (Broncho).	Pneumonia (unspecif.).	Poliomyelitis.	Puerperal Septicæmia.	Scarlet Fever.	Septic Sore Throat.	Syphilis.	Tetanus.	Trachoma.	Tuberculosis.	Typhoid Fever.	Undulant Fever.	Whooping-cough.	Total.
Brought forward	12		249	12		12	2	9	27		849	211		125	2	1	33	56	3		3	33	23			9		7	2	165	1,845
Courtenay	4		14	13					1		329	12	1				5	4	1			1	1					2			388
Cranbrook	6		17	1				1	8		24	1					2	2	2	1		2	12			6		6		11	102
Creston			3					2	3		93	7		2				6				14	8								138
Cumberland			8						3			2					2	2	2												19
Donald																															
Duncan			20		2				28		42	24							2			10								65	193
Enderby	4		3						1			1		7			4	1				13									34
Esquimalt		3	13						13			42		1									1							5	78
Fernie	5		3					2				1		1			1		1			5									19
Field											37												1								38
Fraser Lake			1					1			77							1				2	1			77					160
Ganges																															
Garden Bay																															
Gibsons Landing																															
Golden											2	6											1							16	25
Grand Forks	1		1								35			2			7		2				10		1						59
Greenwood			3									15					1														19
Halcyon Springs																															
Hammond	3										19						2	3							1						28
Haney	6											1					5	2	2			2									18
Hazelton	1			2							18	24			1		2	11			1					31					91
Hedley			17								20	5																			42
Hope																															
Invermere			1								3	2		4						1										9	20
Ioco	1							1										1													3
James Island											3																			29	32
Kamloops	18	1	86	1					9			4		3			18	2		1		10	1					3	1	36	194
Kaslo			14																											49	63
Kelowna			12									1		2					1			62	4			2					84
Keremeos																															
Kimberley	2	1	49						7		64	7		1			1	10				8	2							34	186

Kincolith											16	7																			23
Ladner	2		16								35	4		5			3					4	8						1		78
Ladysmith			1								59	48			1			1	3			1									114
Lake Cowichan					5							2						1				4	2							21	35
Langford																															
Langley Prairie	3	1	16			1		1				1	1				10	1	2	1		9	1							3	51
Lillooet											42							3										3			48
Lytton			2			3					9						9	1										3			27
McBride	2		1			2					2						9	13				5									34
Masset			64						56		81																				201
Mayne Island			1					1			51	5																			58
Merritt						2													1												3
Michel		1							1				1																		3
Mission City		1	16						2		109	1					11	3				6							1	1	151
Nakusp											12			6								2	5								25
Nanaimo	5		17						126		58	43		1				2				1	1					2			256
Nelson	2	1	7					2	13		2	3		4	1		6	6	1			10	11							7	76
New Denver																															
New Westminster	37	1	127					4			106	30	1	16			5	10	6			13	8						4	8	376
North Vancouver	17																														17
Oak Bay			15						1			127										1								6	150
Ocean Falls			4								21							1			1	2	1								30
Oliver	1		15						2		21	25		1																2	67
Pacofi											2	17																			19
Parksville			16						2		22	25					1	1	1									1			69
Patricia Bay											68	2																			70
Peace River District			14					2	3		500	1		6			1	4				11								44	586
Peachland																															
Pender Harbour																															
Pender Island											15	1																			16
Penticton	8	1	3								13	2					2	2	3			22									56
Pioneer Mines																															
Port Alberni	2		15	3				1	4		16	3					10	7				1	5					2		35	104
Port Alice											20	6						3	2							1					32
Port Coquitlam	4		39								24	46					1	6					1								121
Port Haney			18	5								1										3								5	32
Port Moody			1						1		12	2		2																2	20
Port Renfrew											9																			1	10
Port Simpson	1																	1													2
Powell River	2		50						18		20	7											15							4	116
Premier			4											2																	6
Prince George	2		65					1			22	27					1	4				10								3	135
Prince Rupert			97					1	3		79	30																		1	211
Carried forward	151	11	1,138	37	7	20	2	29	332		3,061	832	4	191	5	1	152	171	35	4	5	262	128		2	126		29	11	560	7,306	

TABLE SHOWING RETURN OF CASES OF NOTIFIABLE DISEASES IN THE PROVINCE FOR THE YEAR 1940—*Continued.*

	Cancer.	Cer. Sp. Meningitis.	Chicken-pox.	Conjunctivitis.	Diphtheria.	Dysentery (all forms).	Encephalitis.	Erysipelas.	German Measles.	Gonorrhœa.	Influenza.	Measles.	Meningitis (Simple).	Mumps.	Paratyphoid Fever.	Pellagra.	Pneumonia (Lobar).	Pneumonia (Broncho).	Pneumonia (unspecif.).	Poliomyelitis.	Puerperal Septicæmia.	Scarlet Fever.	Septic Sore Throat.	Syphilis.	Tetanus.	Trachoma.	Tuberculosis.	Typhoid Fever.	Undulant Fever.	Whooping-cough.	Total.
Brought forward	151	11	1,138	37	7	20	2	29	332	.....	3,061	832	4	191	5	1	152	171	35	4	5	262	128	.....	2	126	.....	29	11	560	7,306
Princeton	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	3
Qualicum Beach	1	.....	.....	.....	.....	.....	.....	.....	32	.....	.....	1	.....	1	.....	.....	1	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	3	40
Queen Charlotte	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	20	83	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	103
Quesnel	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	3	.....	.....	.....	.....	.....	.....	1	.....	9
Revelstoke	.....	.....	4	.....	.....	.....	.....	.....	2	.....	.....	1	.....	.....	.....	.....	2	1	.....	.....	.....	.....	2	.....	.....	.....	.....	.....	.....	.....	12
Rock Bay	.....	.....	1	.....	.....	.....	.....	.....	1	.....	22	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	3	.....	.....	.....	.....	.....	.....	.....	.....	28
Rossland	.....	.....	10	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	11
Saanich	.....	1	190	.....	.....	.....	.....	.....	11	.....	.....	244	.....	1	.....	.....	.....	.....	.....	.....	.....	15	.....	.....	.....	.....	.....	.....	1	68	531
Saanichton	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	15	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	16
Salmo	.....	.....	4	4	.....	.....	.....	.....	7	.....	71	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	6	6	.....	.....	.....	.....	.....	.....	.....	100
Salmon Arm	4	.....	11	.....	.....	.....	.....	.....	.....	.....	30	1	.....	.....	.....	.....	.....	4	.....	.....	.....	.....	3	.....	.....	.....	.....	1	.....	.....	54
Saltspring Island	.....	.....	.....	.....	.....	.....	.....	2	.....	.....	6	6	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	16
Sardis	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	2	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5
Sechelt	.....	.....	5	.....	.....	.....	.....	.....	.....	.....	32	6	.....	1	.....	.....	.....	2	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	4	51
Shawnigan Lake	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Sidney	2	.....	1	.....	.....	.....	.....	.....	1	.....	53	10	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	2	.....	.....	.....	.....	.....	.....	6	76
Smithers	.....	.....	52	2	.....	.....	.....	.....	2	.....	28	1	.....	.....	.....	.....	3	7	.....	.....	.....	8	9	.....	.....	6	.....	.....	.....	.....	118
Sooke	.....	.....	1	1	.....	.....	.....	.....	2	.....	.....	32	.....	.....	.....	.....	1	.....	.....	1	.....	1	4	.....	.....	.....	.....	.....	.....	.....	43
South Wellington	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Squamish	.....	.....	22	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	24
Steveston	2	.....	.....	1	.....	.....	.....	4	.....	.....	19	.....	.....	6	.....	.....	3	1	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	37
Stewart	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	9
Summerland	1	.....	8	.....	.....	.....	.....	1	.....	.....	145	.....	.....	.....	.....	.....	.....	2	.....	.....	.....	.....	98	.....	.....	.....	.....	.....	.....	.....	255
Telegraph Creek	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	26	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3	13	.....	.....	2	.....	.....	.....	.....	44
Terrace	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5	.....	.....	.....	.....	.....	.....	.....	.....	5
Tofino	.....	.....	4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4
Trail	.....	.....	30	.....	.....	.....	.....	3	9	.....	.....	9	.....	12	.....	.....	.....	.....	.....	.....	.....	6	.....	.....	.....	.....	.....	.....	.....	54	123
Tulsequah	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	66	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	66
Ucluelet	.....	.....	44	1	.....	.....	.....	.....	.....	.....	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	48
Greater Vancouver	748	9	1,272	.....	3	.....	.....	38	97	.....	65	1,383	2	207	6	.....	1	.....	.....	.....	.....	180	.....	.....	.....	1	.....	14	8	147	4,181
Vanderhoof	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	5	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	8

Vernon	1		18					1			125	1		1				3				4									154
Victoria	164	3	114						28		365	592	1	1			1					22	1			1		1	112	1,407
Wells				3							66						6	4					18								97
West Summerland																							6								6
West Vancouver			71									4										2							1		78
White Rock			2									1																			3
William Head	2																														2
Williams Lake			7								33						1	1				5							1		48
Woodfibre	1		3								25												2								31
Zeballos	1		2											3																	6
Whole Province—																															
Gonorrhœa										1,472																					1,472
Syphilis																							998								998
Tuberculosis																										1,610					1,610
Totals	1,080	24	3,015	49	10	20	2	79	524	1,472	4,277	3,217	7	433	11	1	176	199	37	5	5	531	293	998	2	137	1,610	45	22	957	19,238

VICTORIA, B.C.:
Printed by CHARLES F. BANFIELD, Printer to the King's Most Excellent Majesty.
1942.

825-342-6666